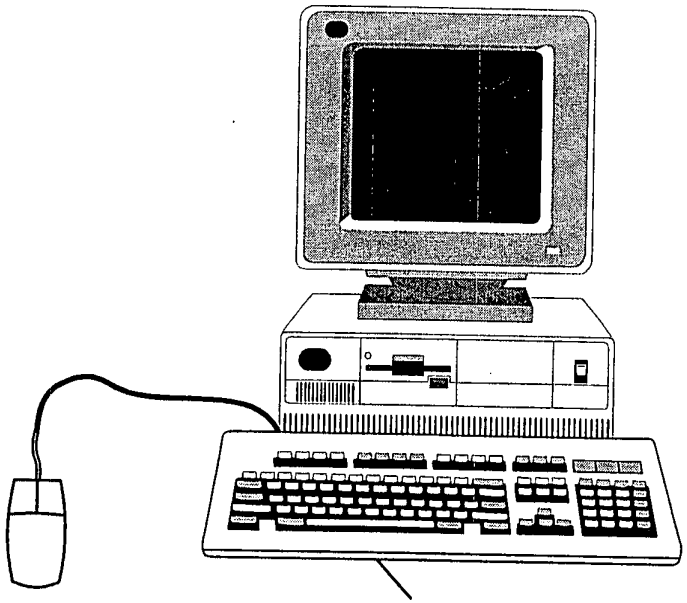

Computer System
82

Figure 1

TO82TT" 2926660

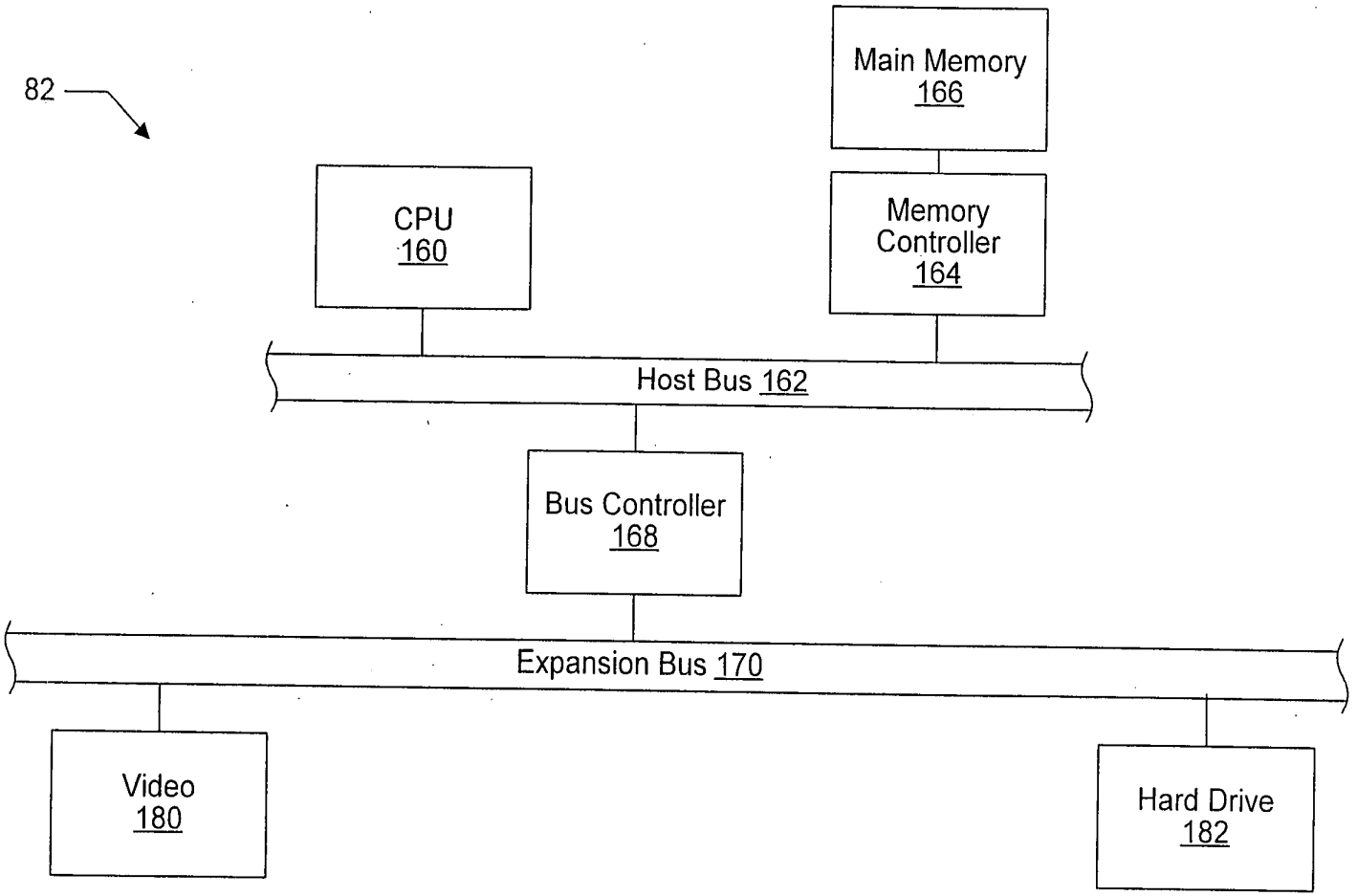

Figure 2

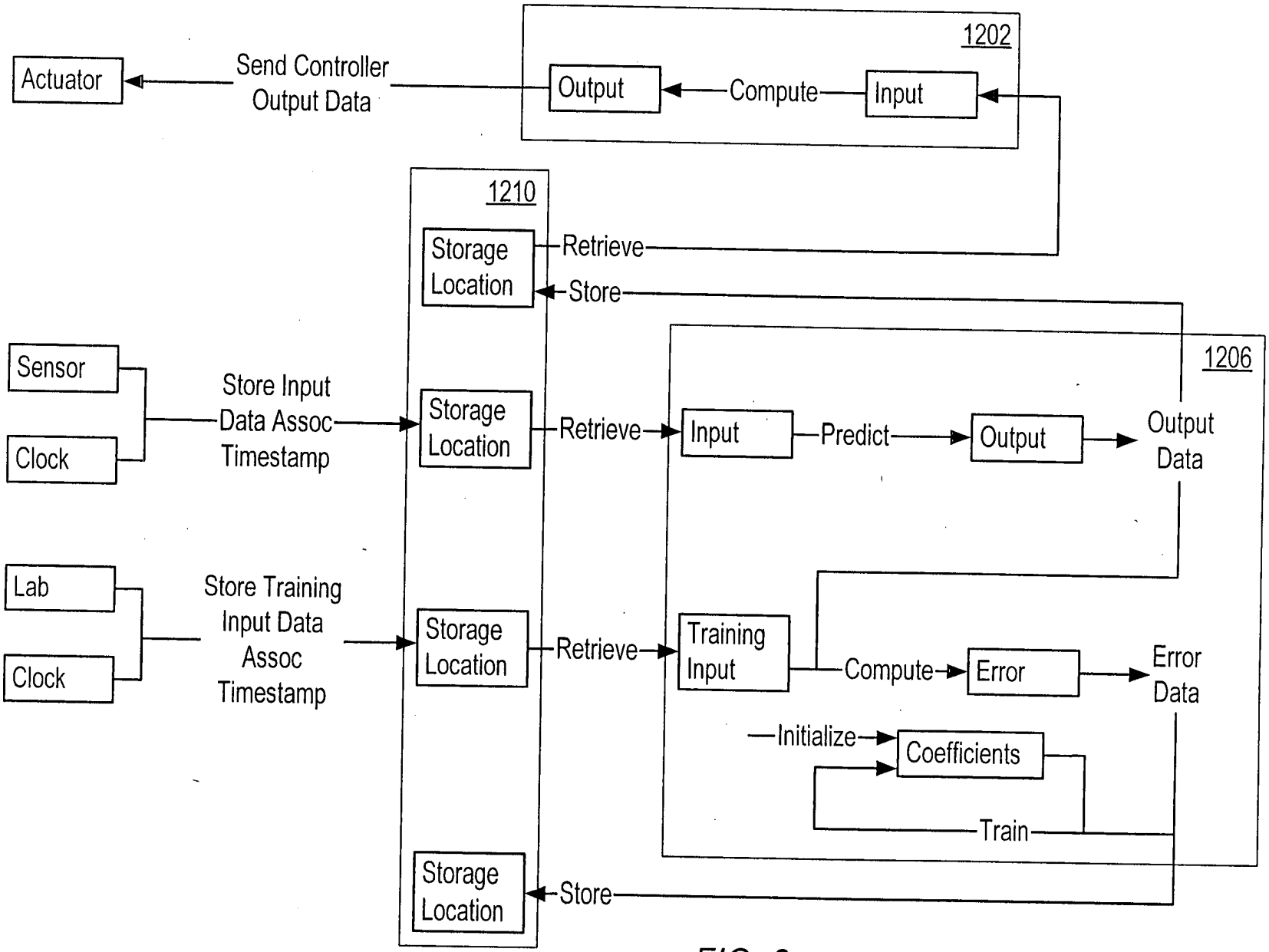
1202
Actuator
Send Controller Output Data
Output
Compute
Input
1210
Storage Location
Retrieve
Store
1206
Sensor
Clock
Store Input Data Assoc Timestamp
Storage Location
Retrieve
Input
Predict
Output
Output Data
Lab
Clock
Store Training Input Data Assoc Timestamp
Storage Location
Retrieve
Training Input
Compute
Error
Error Data
Initialize
Coefficients
Train
Storage Location
Store

FIG. 3

Docket No. 2005-0528

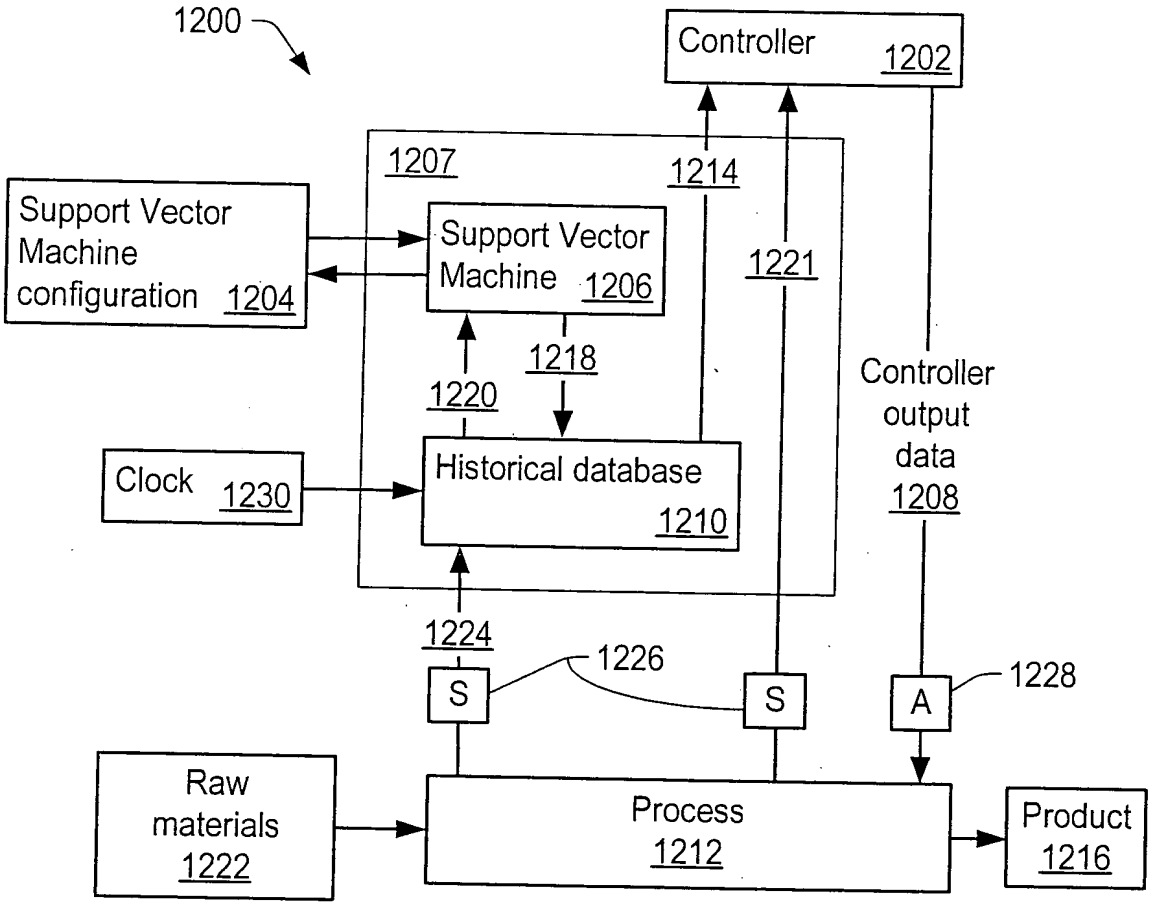

FIG. 4

Patent - 7,958,063

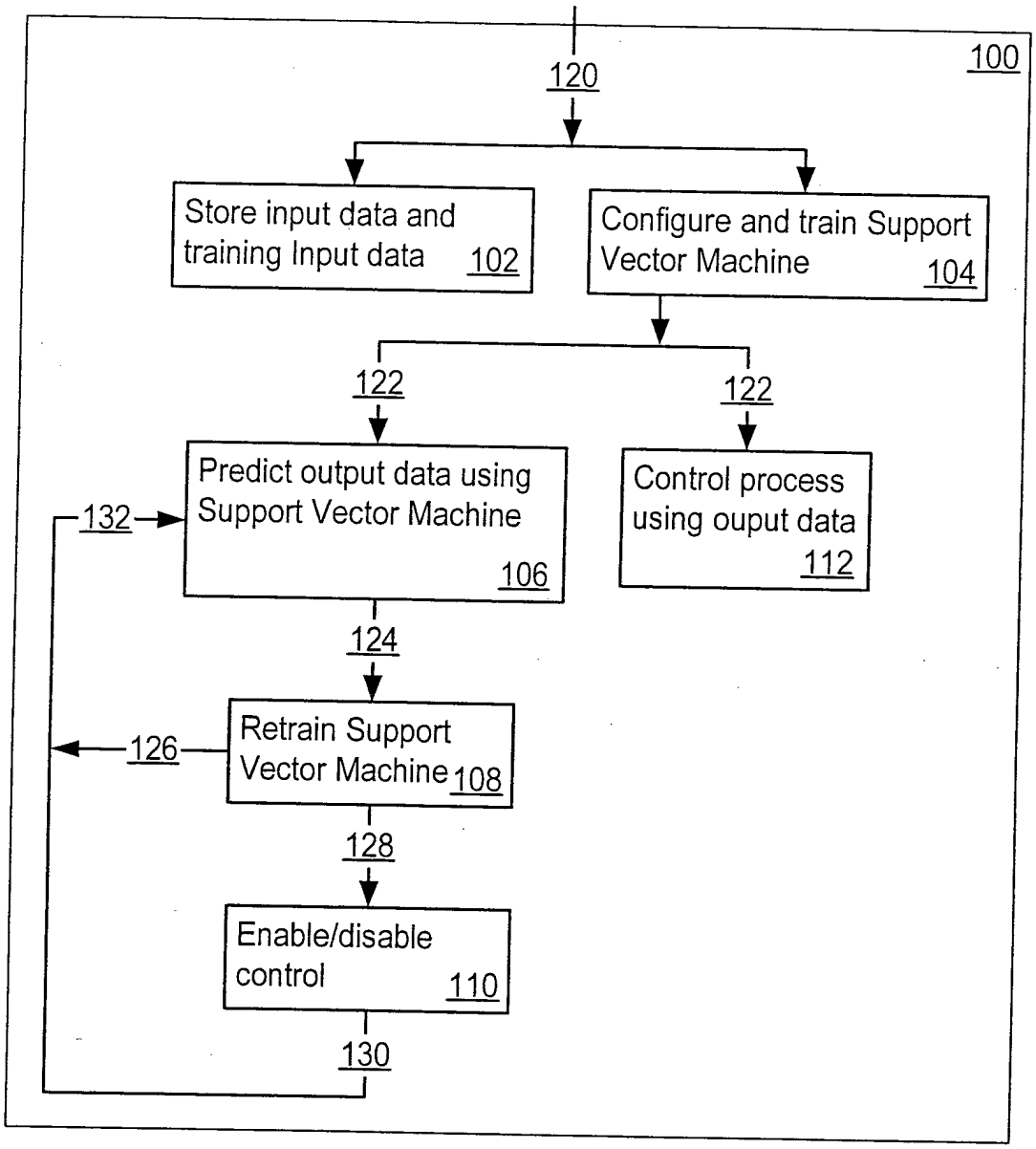

FIG. 5

Patent Application Publication

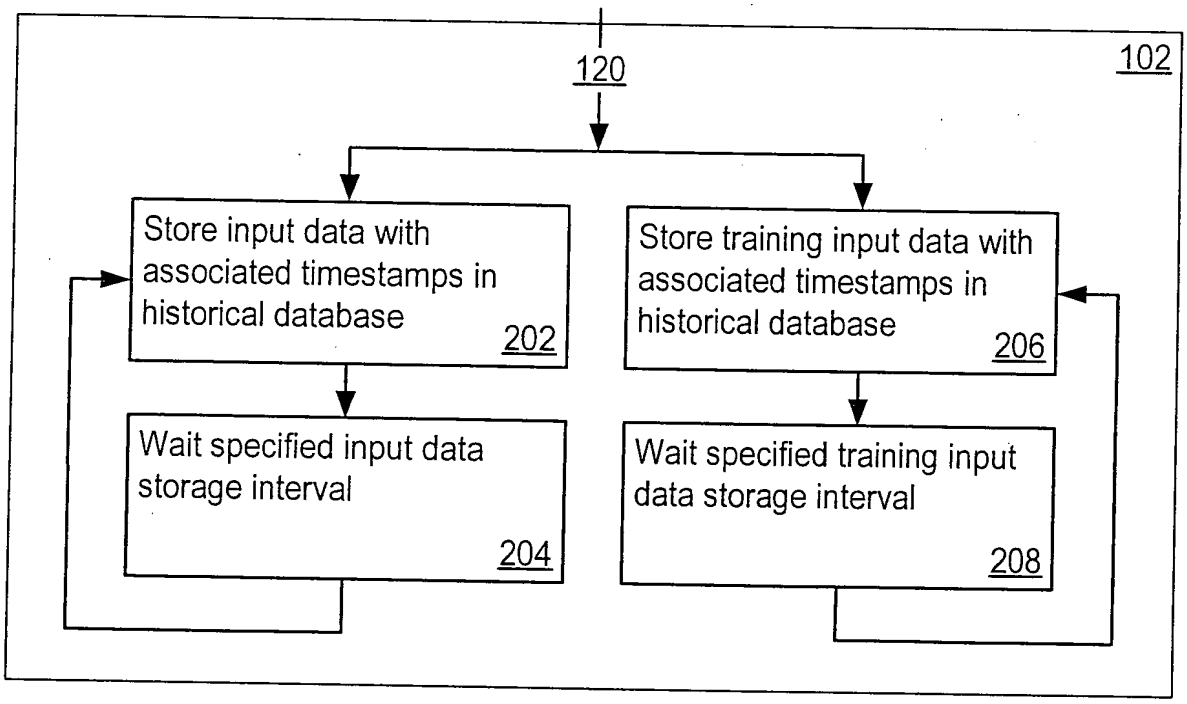

FIG. 6

09/976,762 - 11/28/05

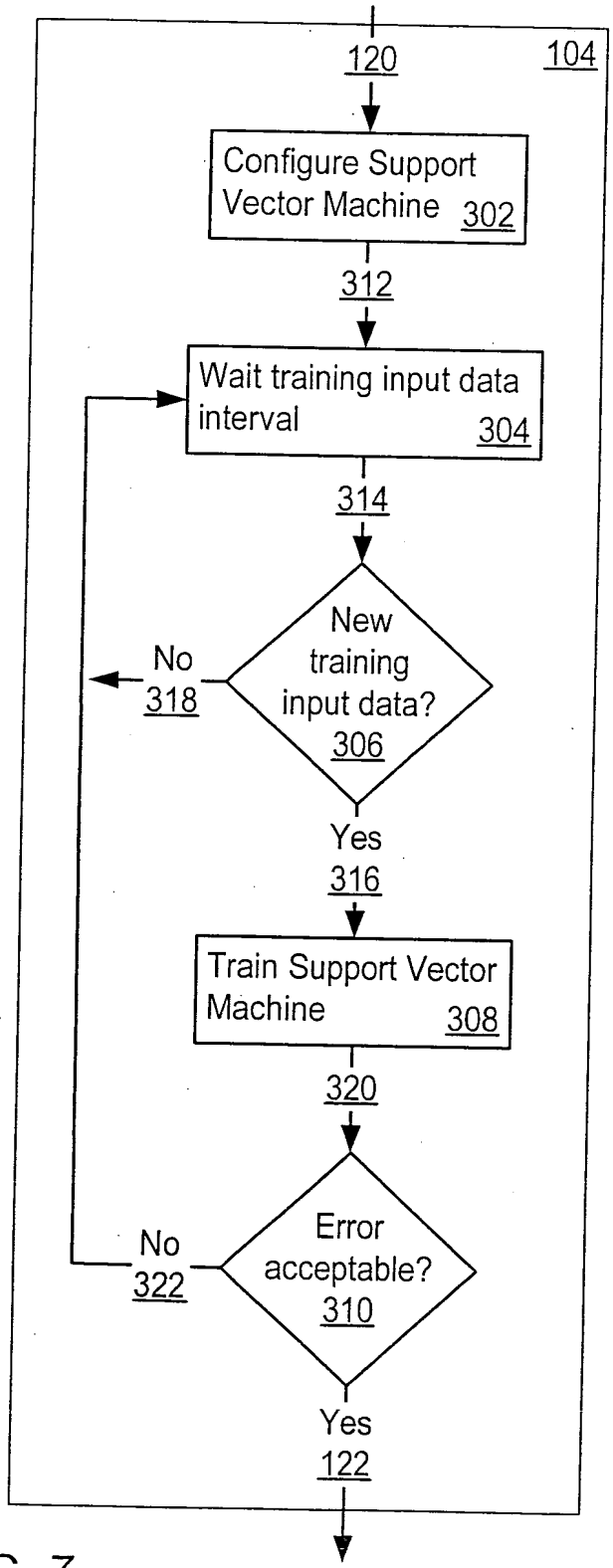

FIG. 7

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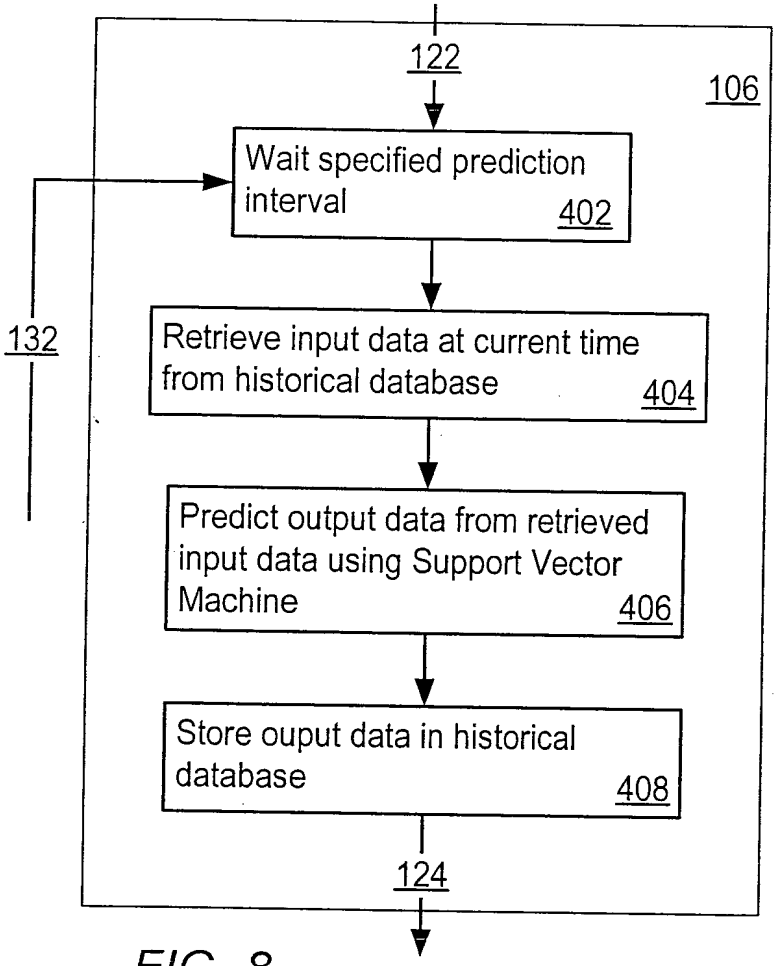

FIG. 8

Doc. No. 1-2-3-4-5-6-7-8-9

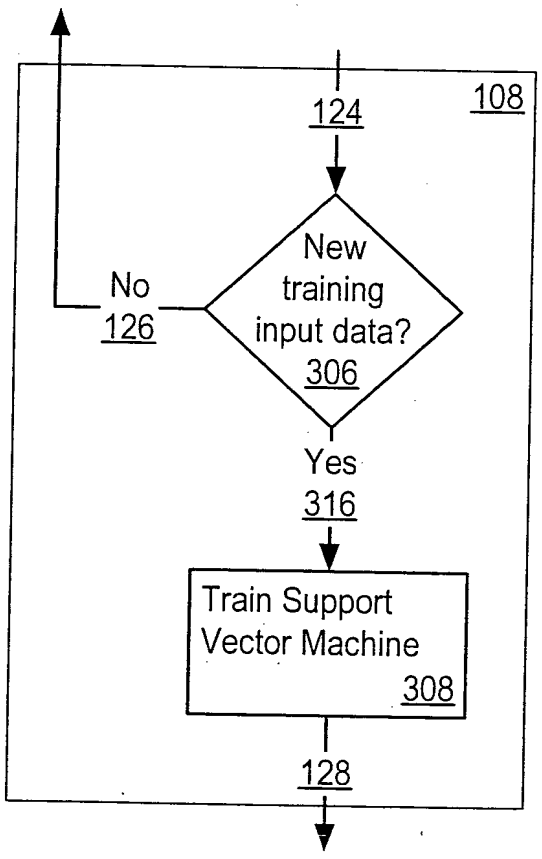

FIG. 9

Patent Application Publication

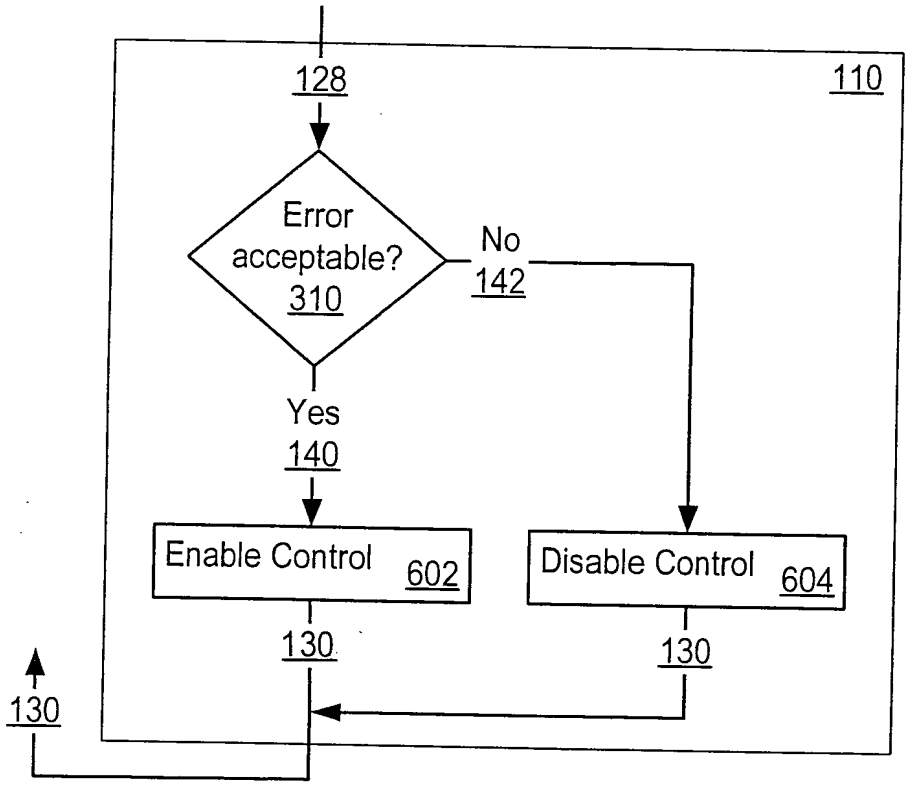

FIG. 10

Petitioner's Exhibit 1008

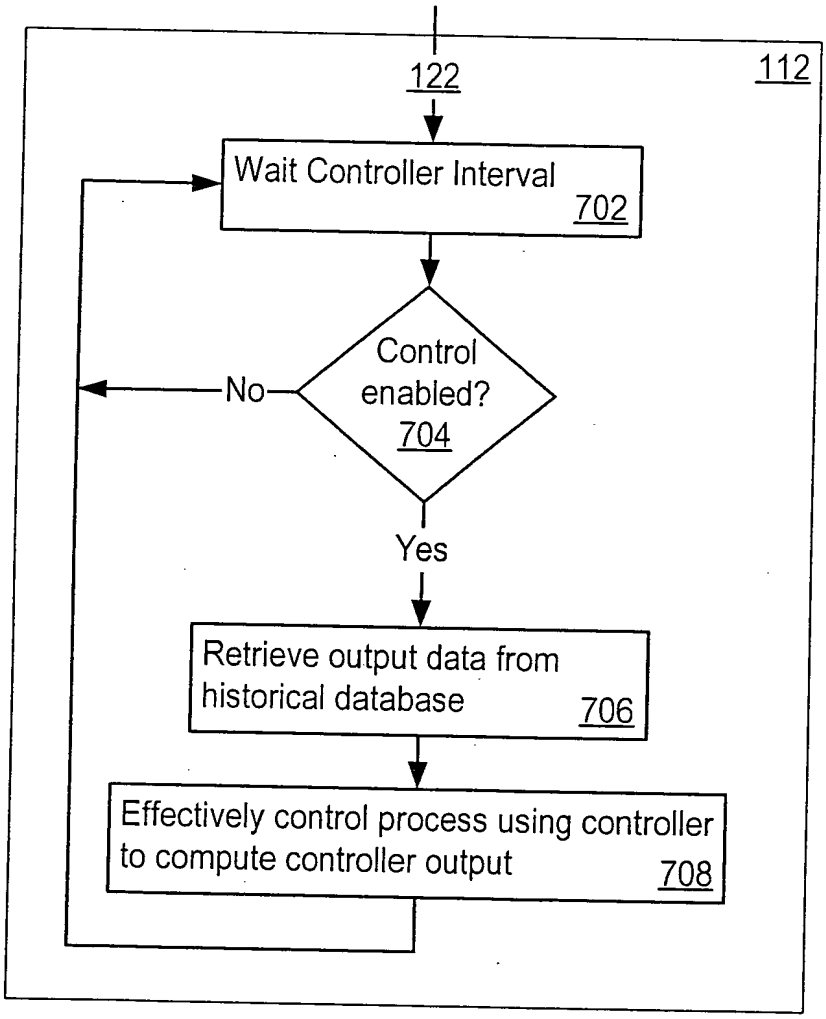

FIG. 11

Page 1 of 2 - 2/5/2008

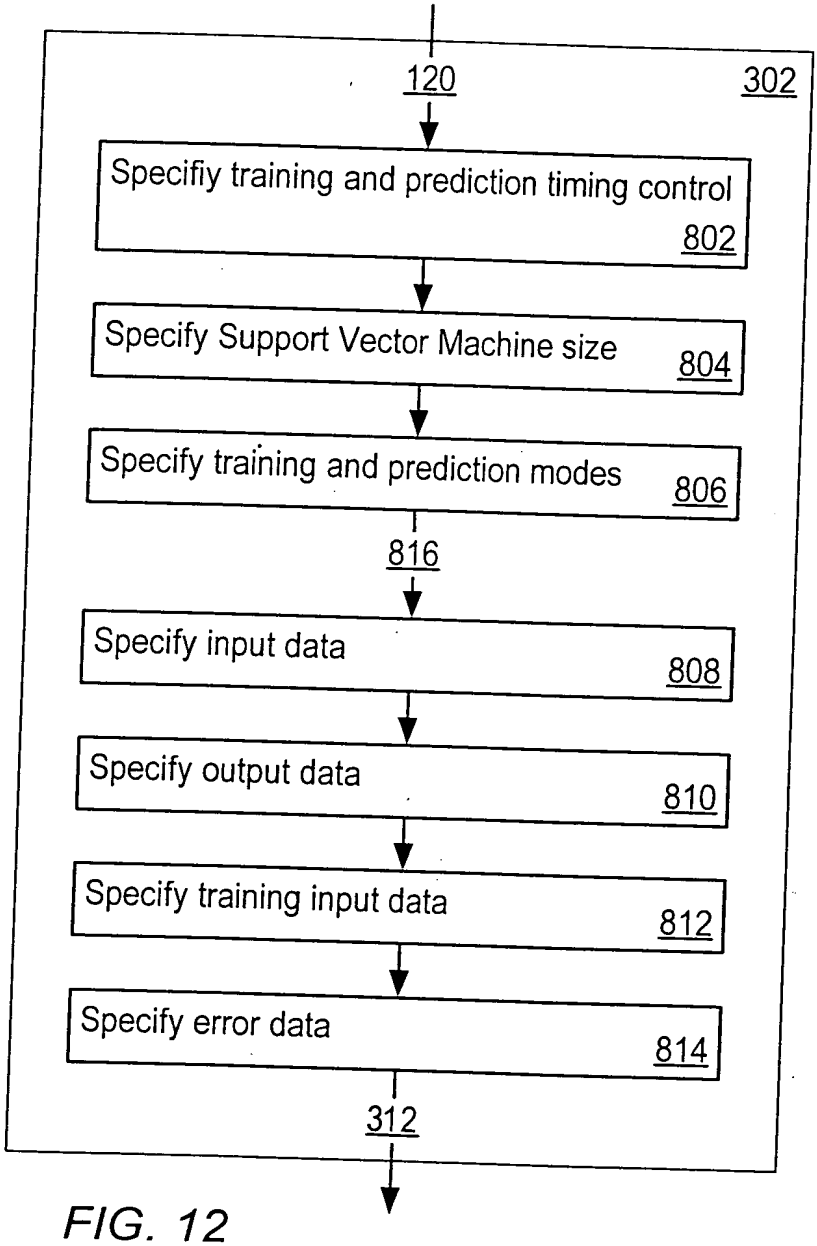

FIG. 12

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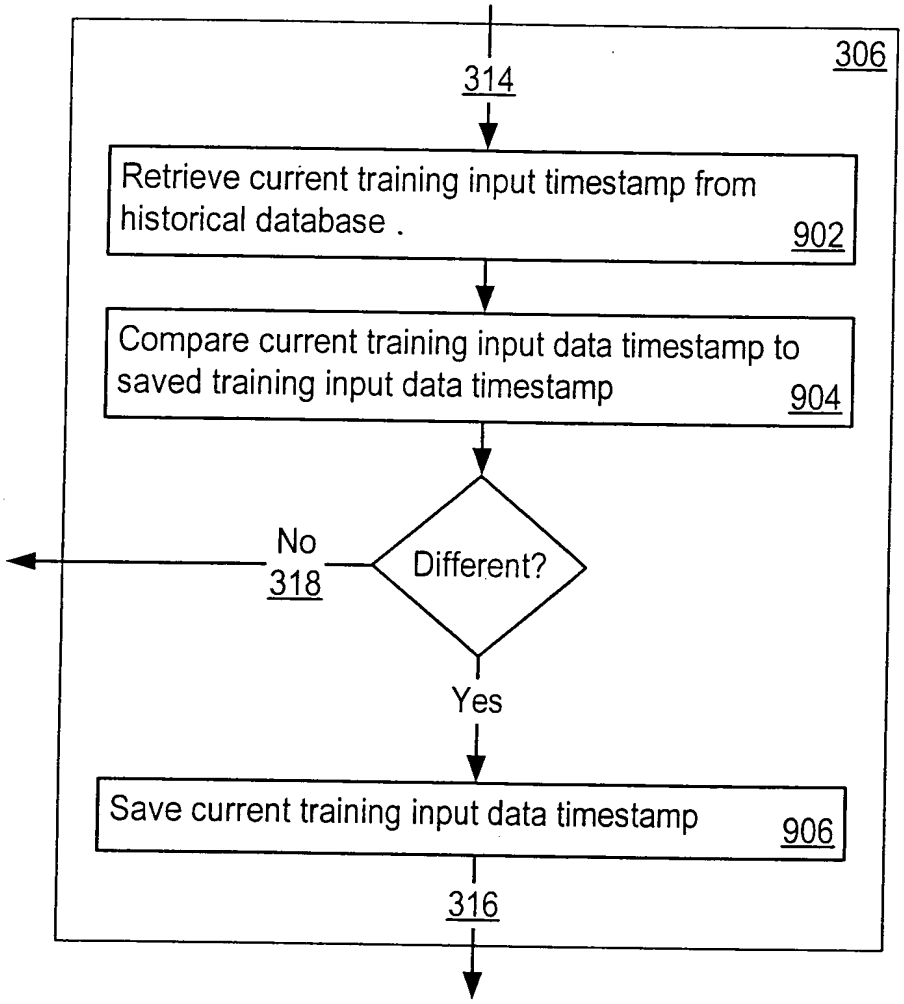

FIG. 13

EXPRESS MAIL NO. EV 339 276 954 US

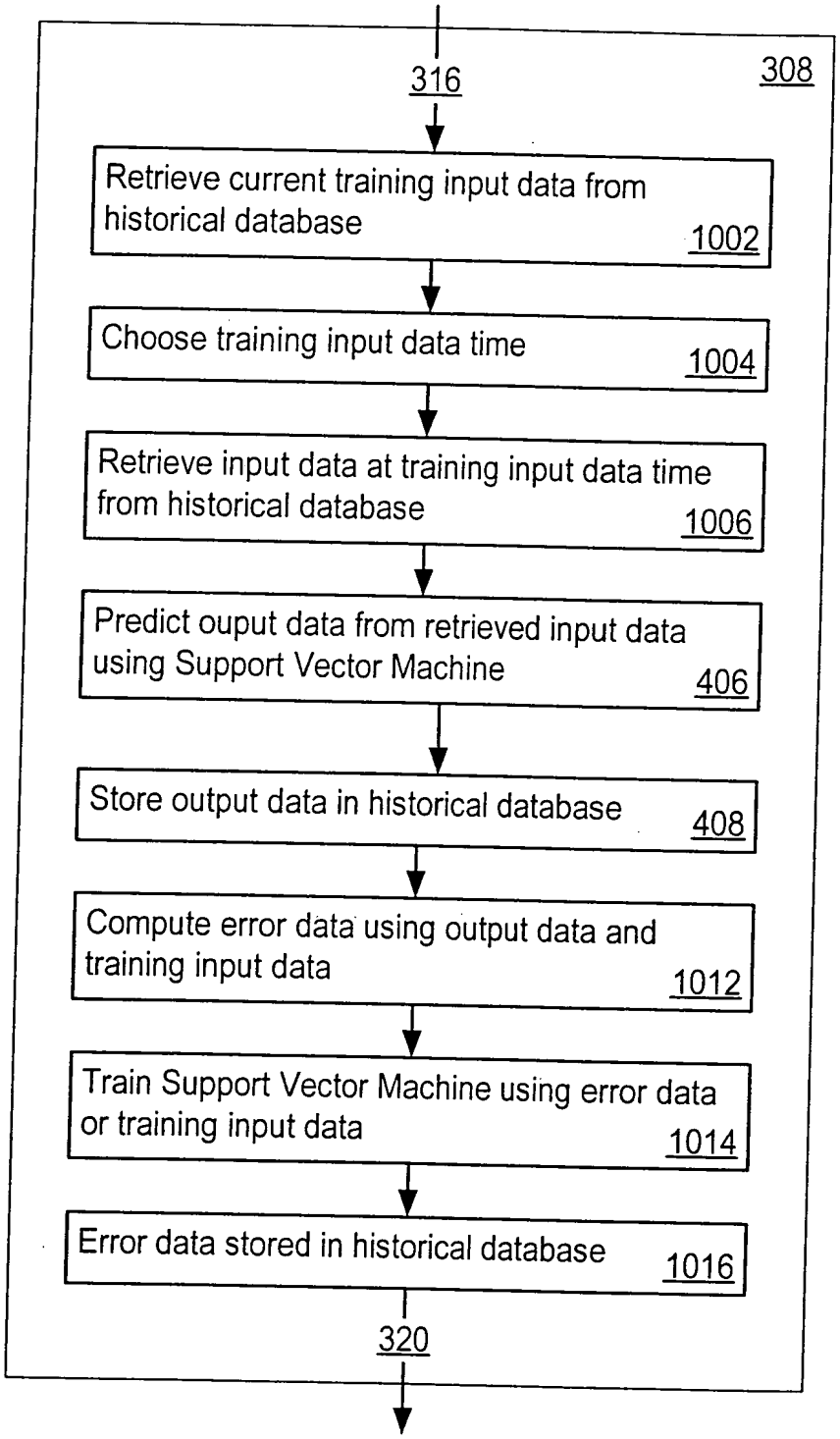

FIG. 14

Doc. No. 2005-0960

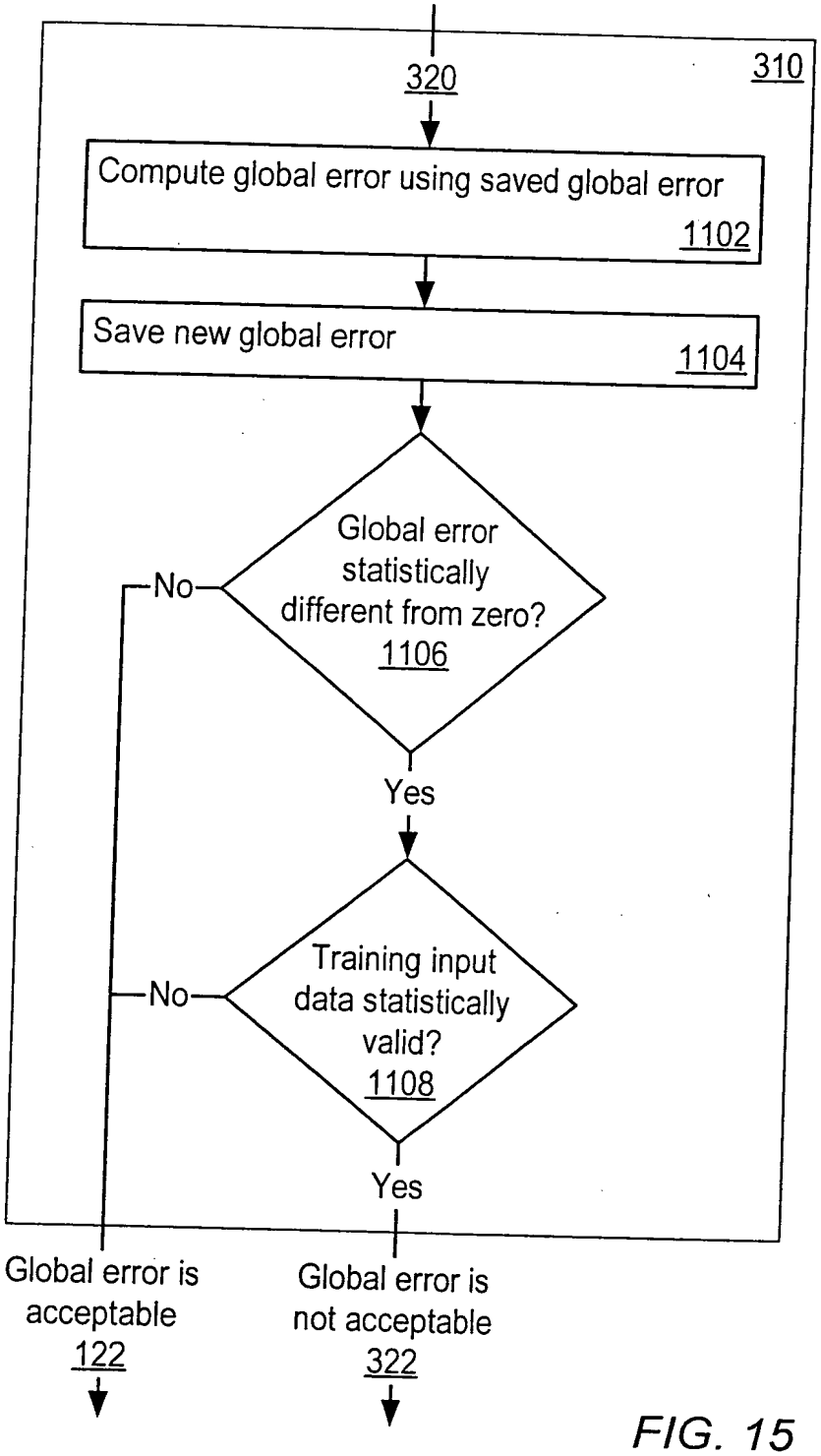

FIG. 15

Page 1 of 1

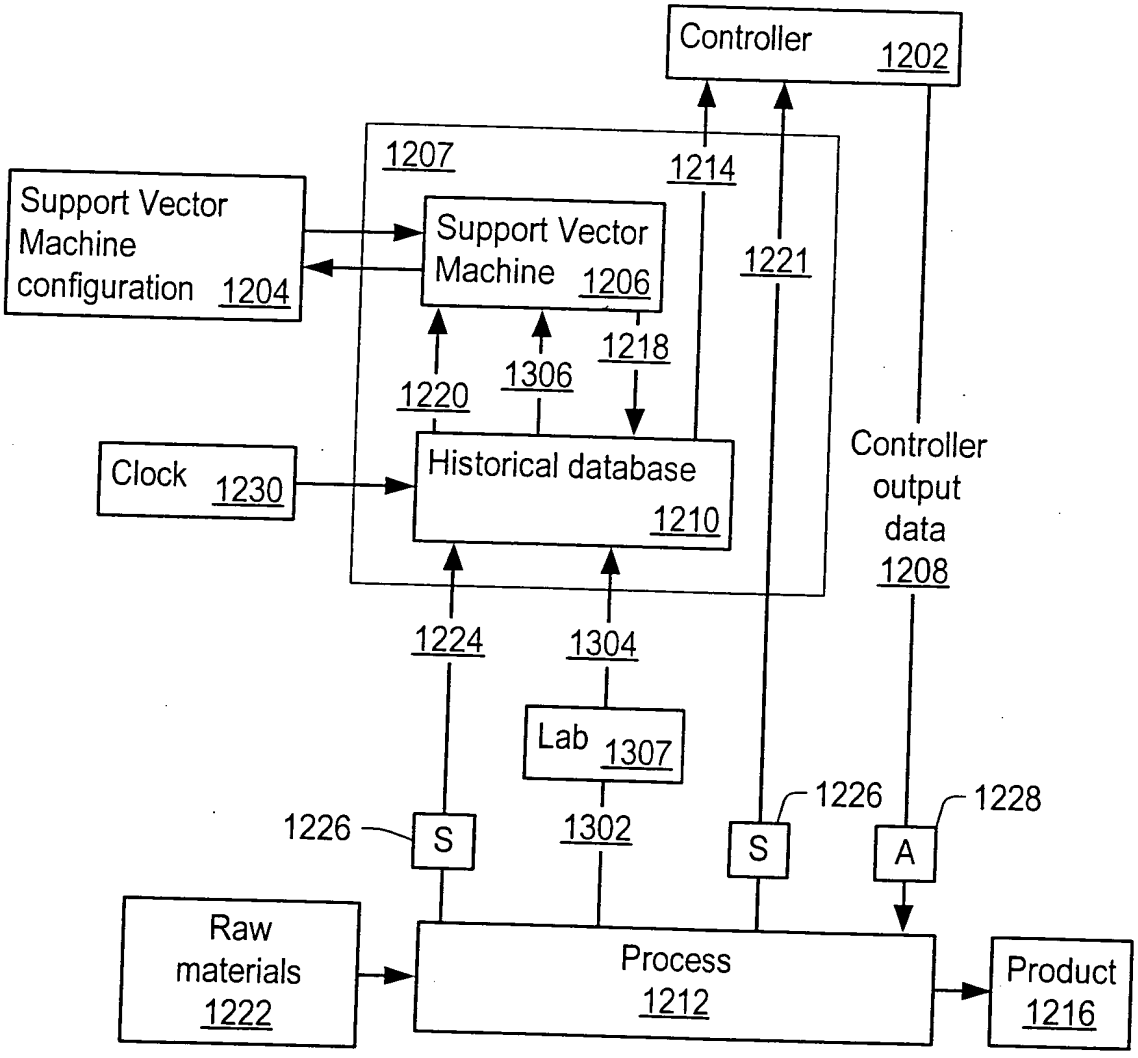

FIG. 16

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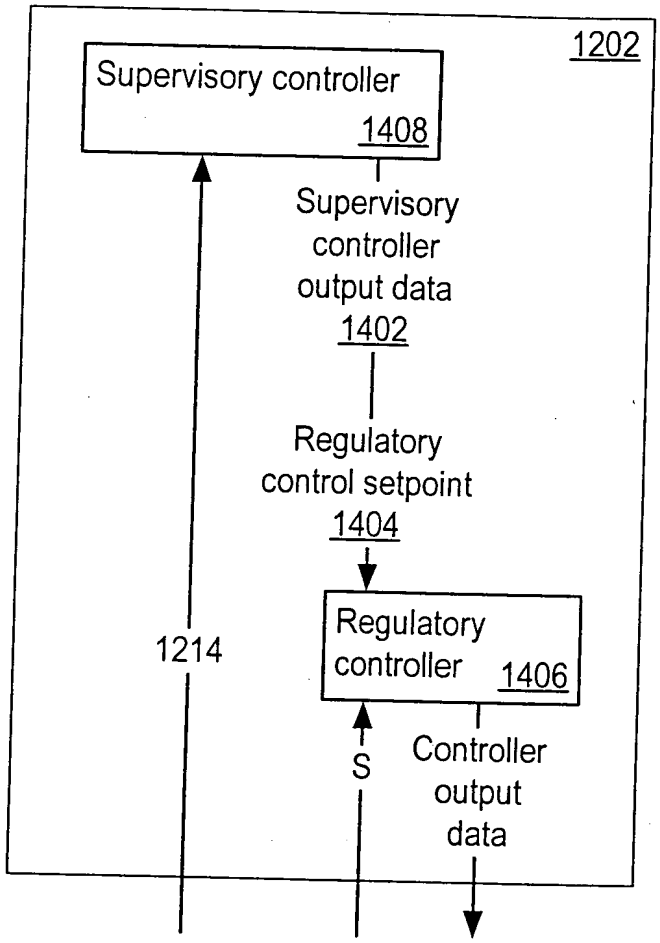

FIG. 17

05/30/2007 11:28:01

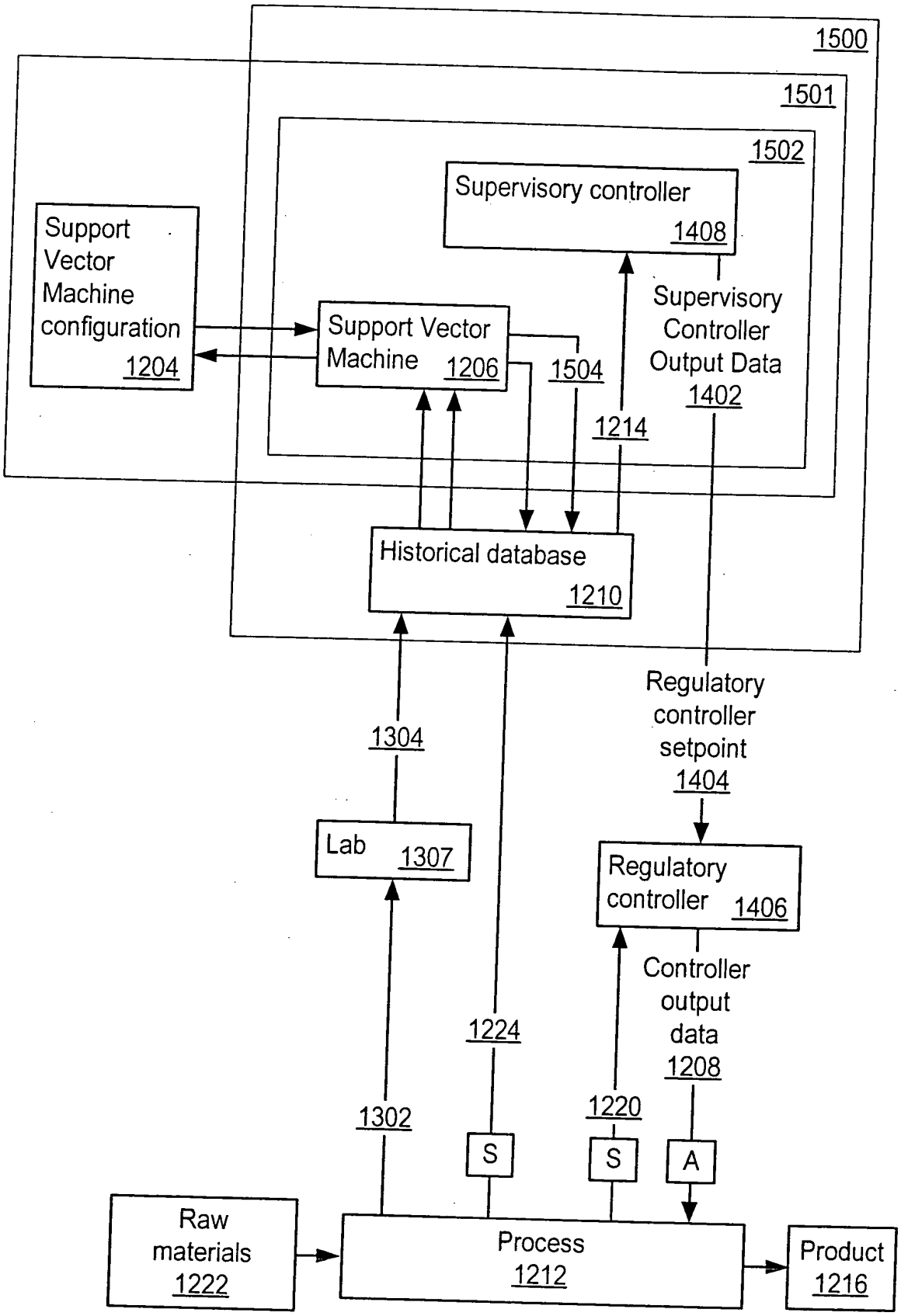

FIG. 18

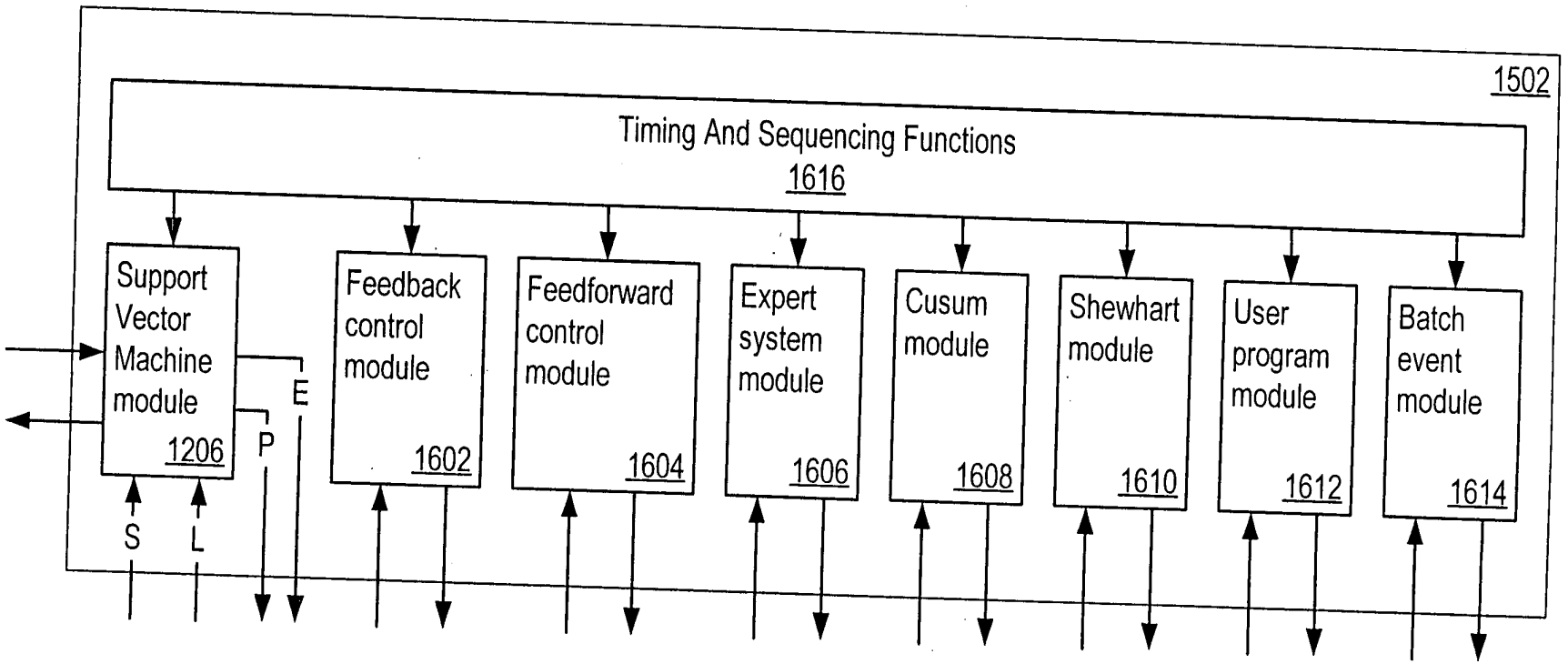
1502
Timing And Sequencing Functions
1616
Support Vector Machine module
1206
S
L
P
E
Feedback control module
1602
Feedforward control module
1604
Expert system module
1606
Cusum module
1608
Shewhart module
1610
User program module
1612
Batch event module
1614

FIG. 19

Patent Application Publication

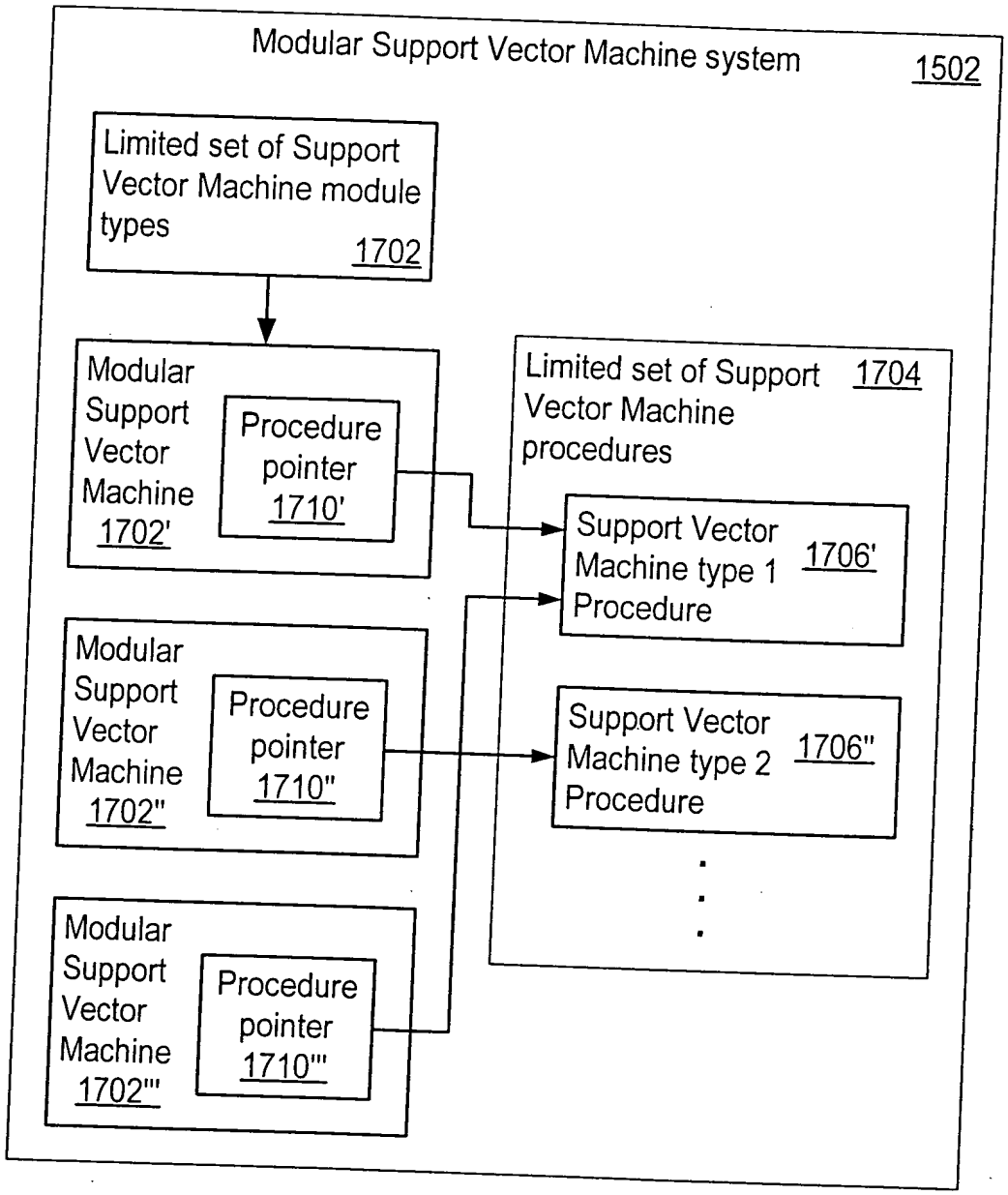

FIG. 20

EFS-Web 2.1.9.6

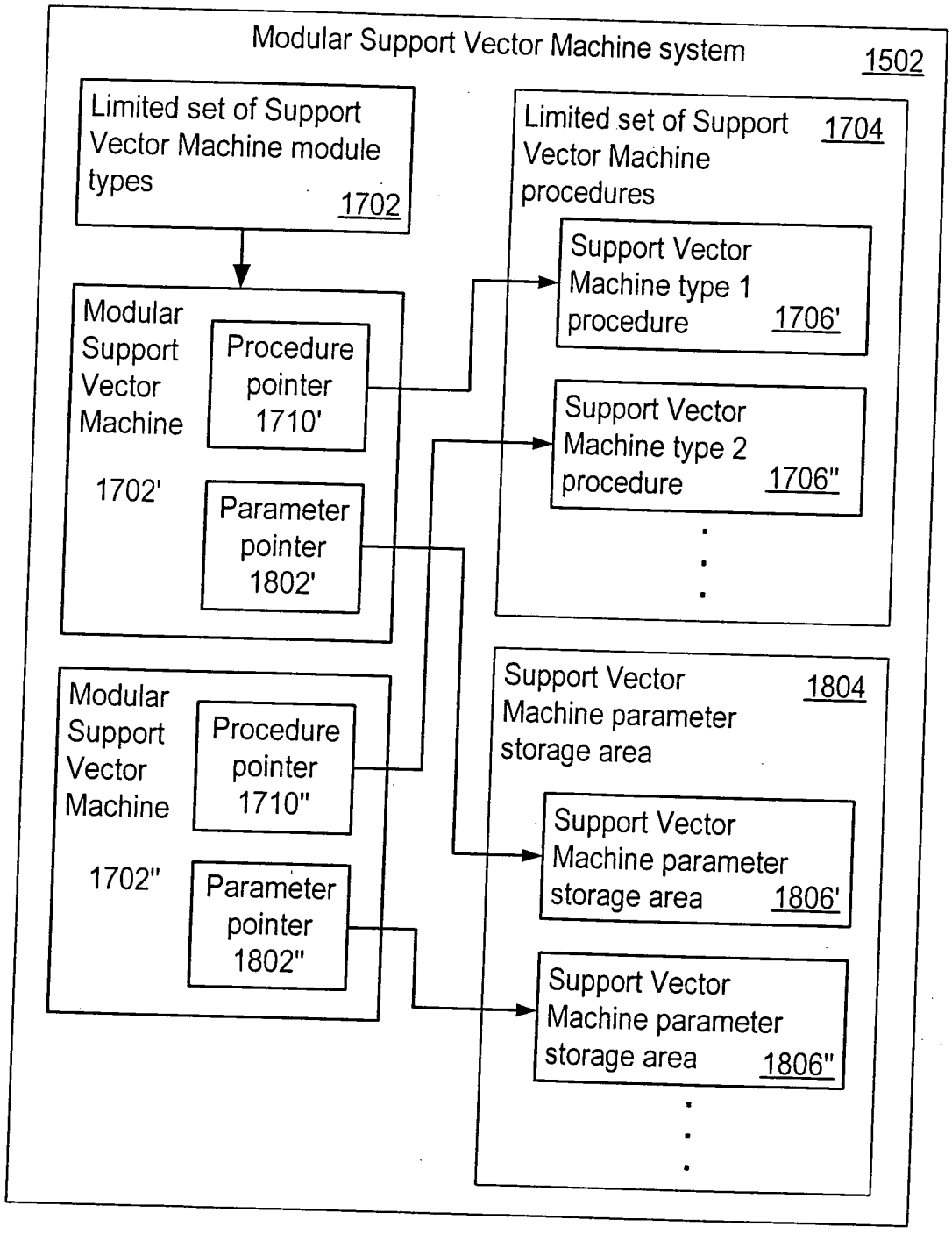

FIG. 21

Docket No. 1743.0050

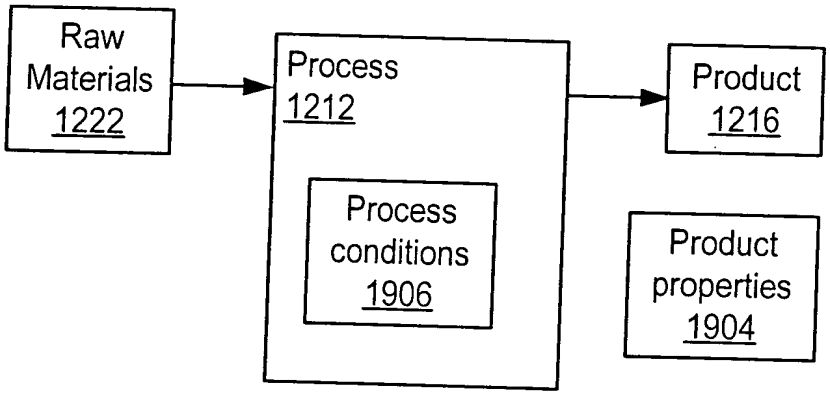

FIG. 22

Thermo Scientific

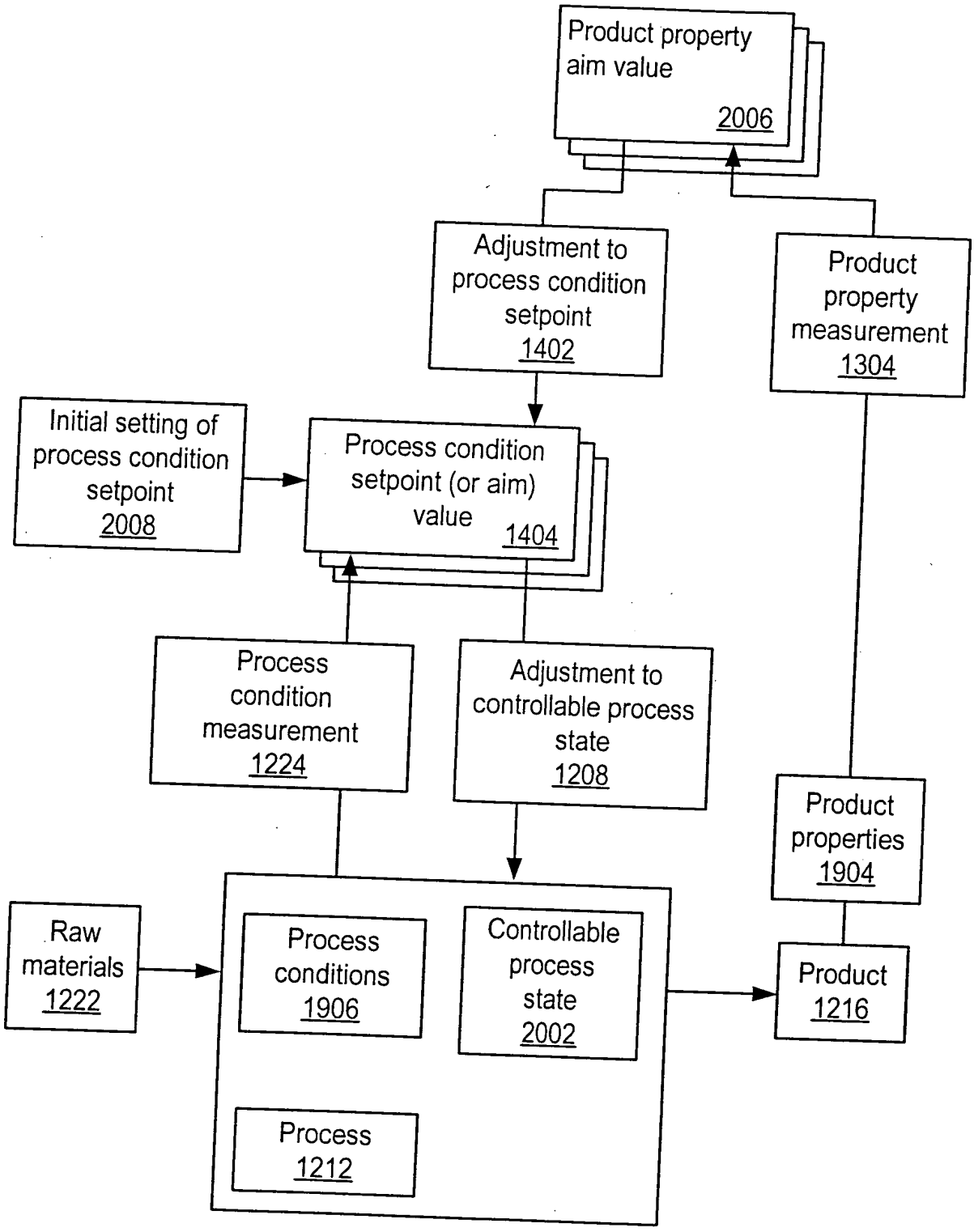

FIG. 23

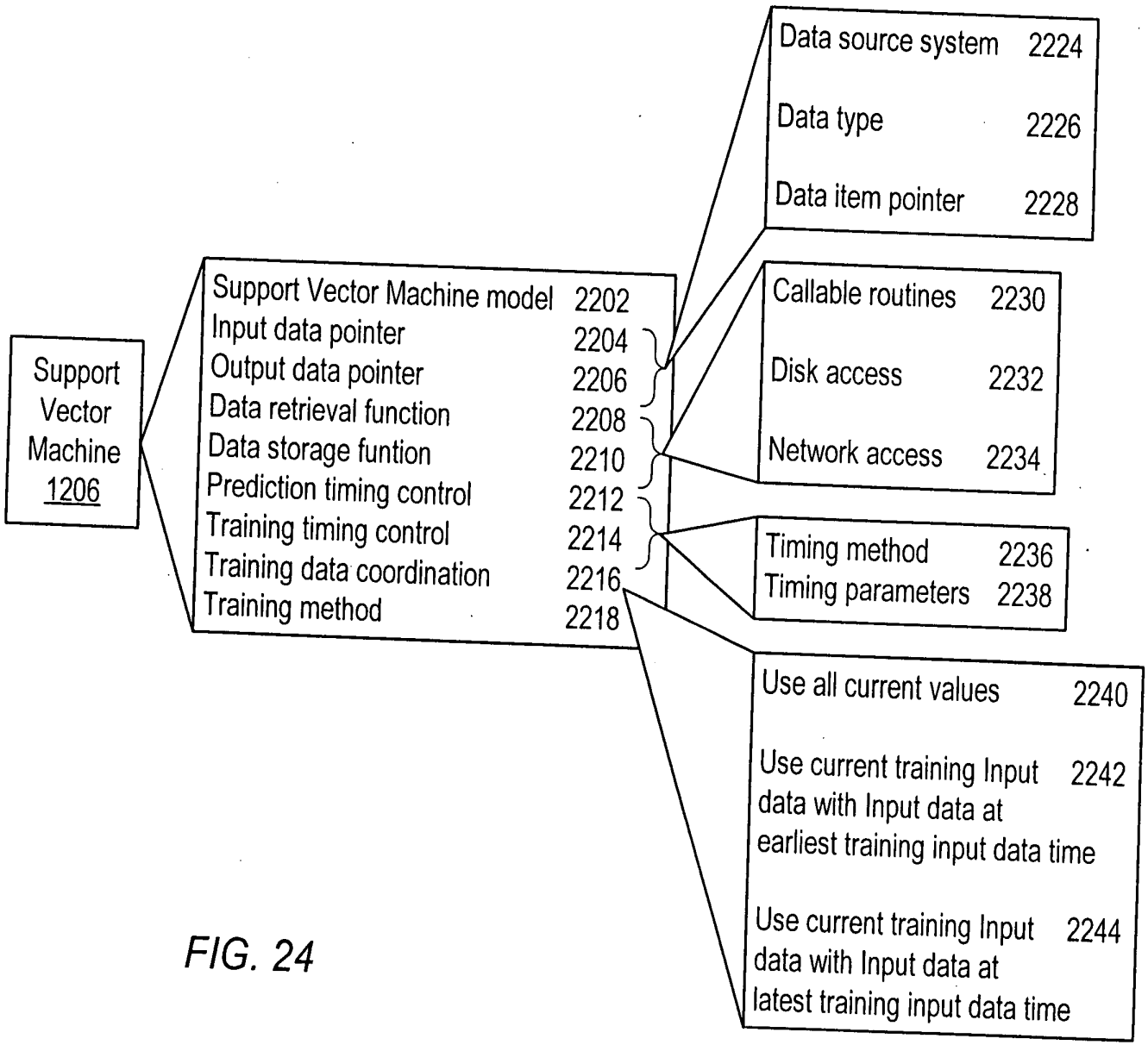
Support Vector Machine 1206
Support Vector Machine model 2202
Input data pointer 2204
Output data pointer 2206
Data retrieval function 2208
Data storage funtion 2210
Prediction timing control 2212
Training timing control 2214
Training data coordination 2216
Training method 2218
Data source system 2224
Data type 2226
Data item pointer 2228
Callable routines 2230
Disk access 2232
Network access 2234
Timing method 2236
Timing parameters 2238
Use all current values 2240
Use current training Input data with Input data at earliest training input data time 2242
Use current training Input data with Input data at latest training input data time 2244

FIG. 24

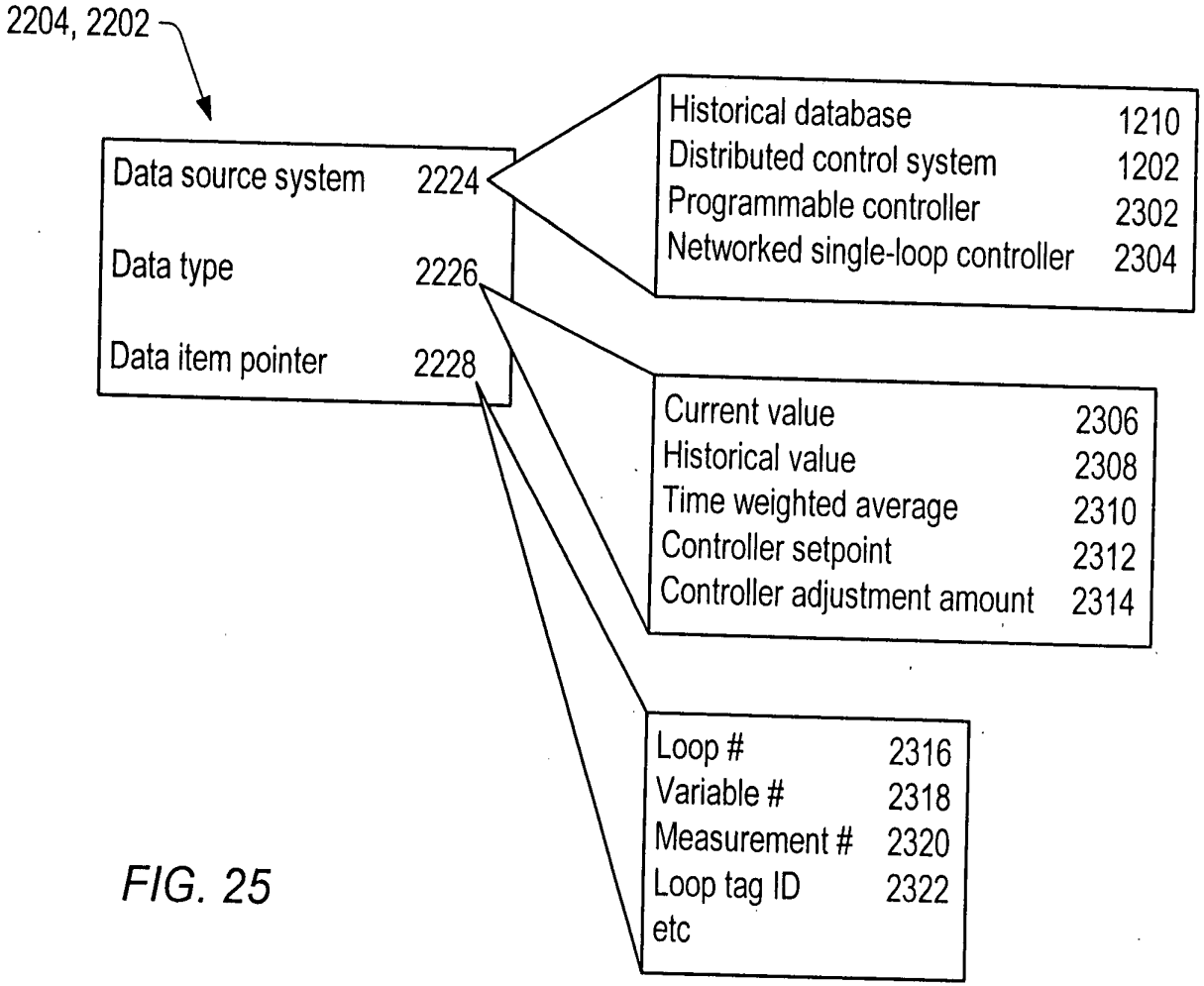
2204, 2202
Data source system 2224
Data type 2226
Data item pointer 2228
Historical database 1210
Distributed control system 1202
Programmable controller 2302
Networked single-loop controller 2304
Current value 2306
Historical value 2308
Time weighted average 2310
Controller setpoint 2312
Controller adjustment amount 2314
Loop # 2316
Variable # 2318
Measurement # 2320
Loop tag ID 2322
etc

FIG. 25

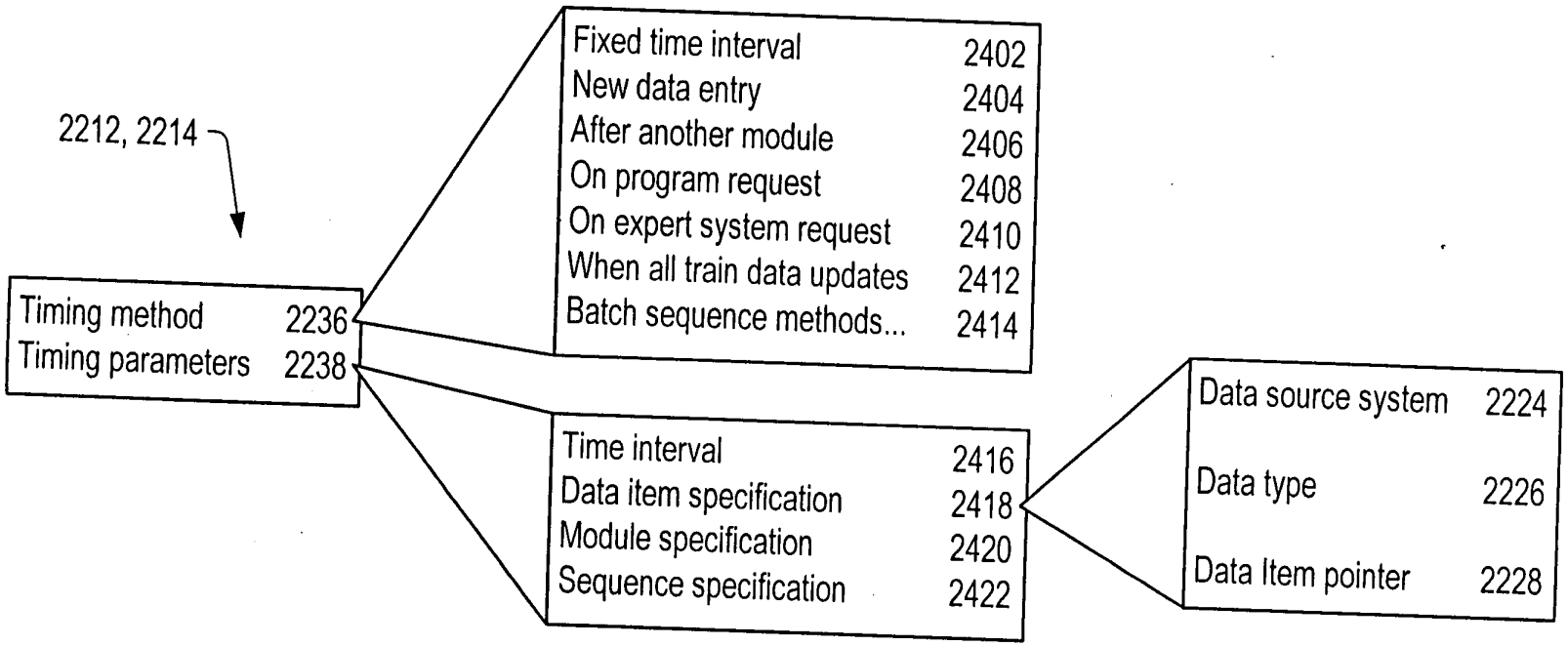
2212, 2214
Timing method 2236
Timing parameters 2238
Fixed time interval 2402
New data entry 2404
After another module 2406
On program request 2408
On expert system request 2410
When all train data updates 2412
Batch sequence methods... 2414
Time interval 2416
Data item specification 2418
Module specification 2420
Sequence specification 2422
Data source system 2224
Data type 2226
Data Item pointer 2228

FIG. 26

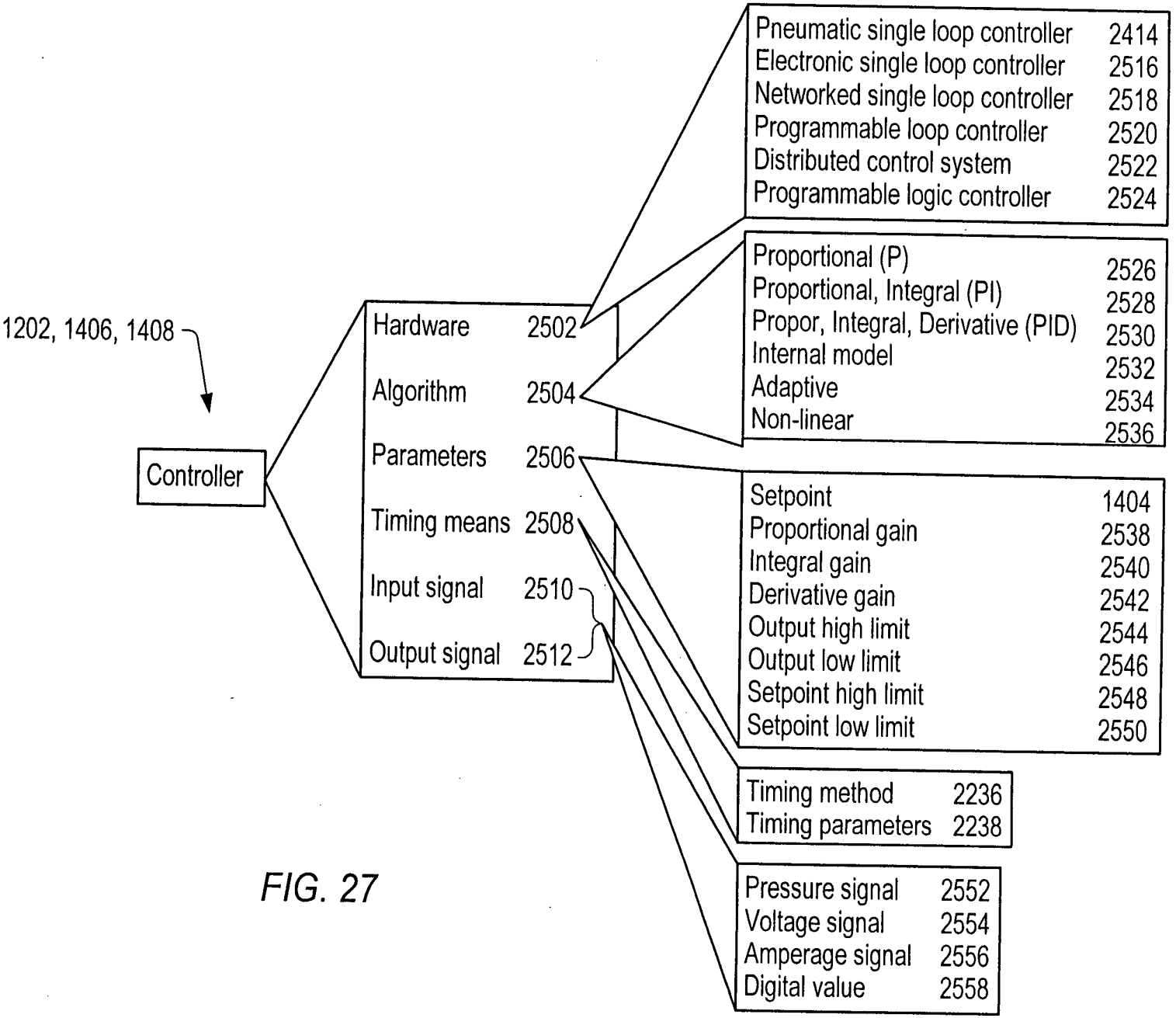
1202, 1406, 1408
Controller
Hardware 2502
Algorithm 2504
Parameters 2506
Timing means 2508
Input signal 2510
Output signal 2512
Pneumatic single loop controller 2414
Electronic single loop controller 2516
Networked single loop controller 2518
Programmable loop controller 2520
Distributed control system 2522
Programmable logic controller 2524
Proportional (P) 2526
Proportional, Integral (PI) 2528
Propor, Integral, Derivative (PID) 2530
Internal model 2532
Adaptive 2534
Non-linear 2536
Setpoint 1404
Proportional gain 2538
Integral gain 2540
Derivative gain 2542
Output high limit 2544
Output low limit 2546
Setpoint high limit 2548
Setpoint low limit 2550
Timing method 2236
Timing parameters 2238
Pressure signal 2552
Voltage signal 2554
Amperage signal 2556
Digital value 2558

FIG. 27

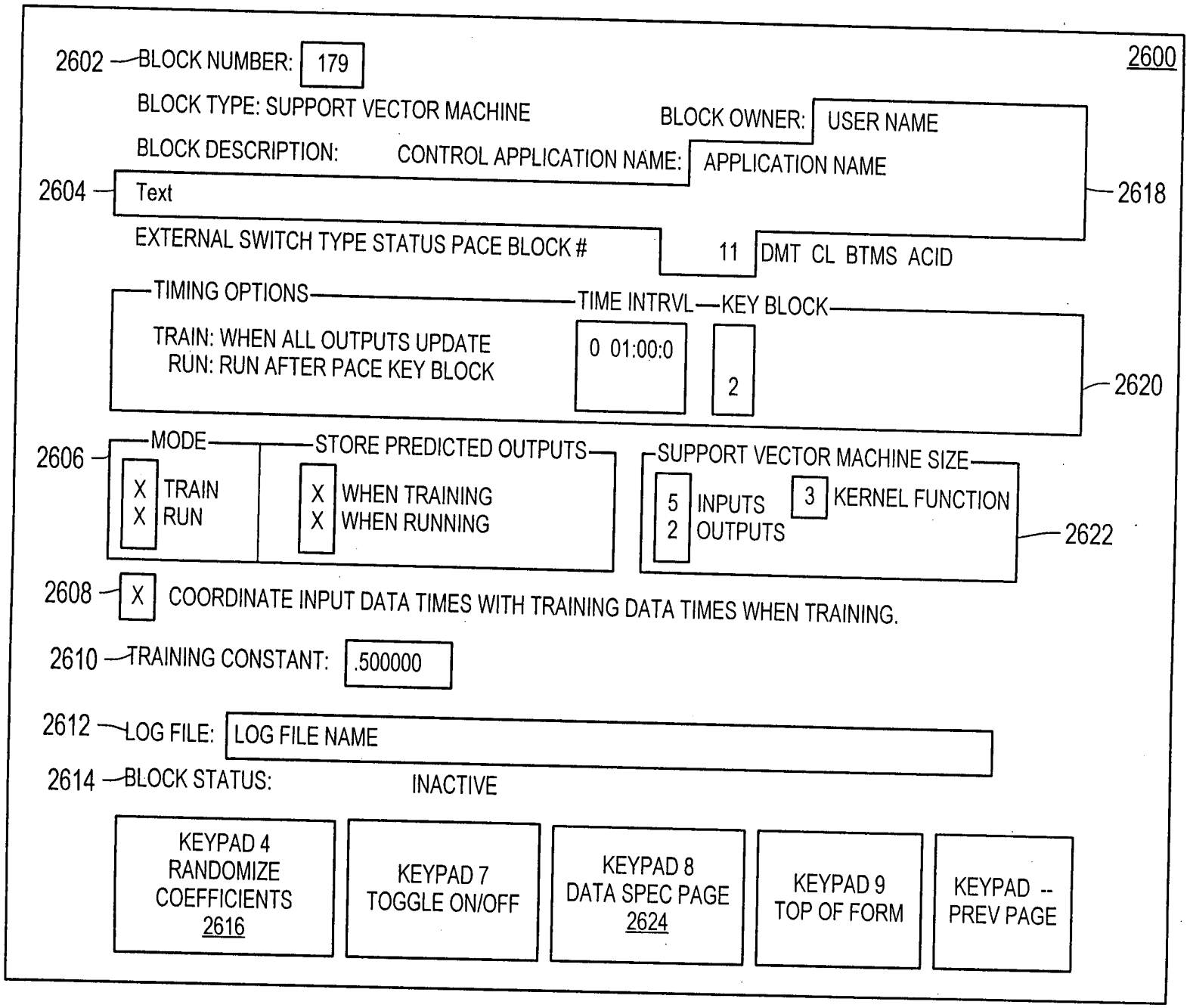
2600
2602
BLOCK NUMBER: 179
BLOCK TYPE: SUPPORT VECTOR MACHINE
BLOCK OWNER: USER NAME
BLOCK DESCRIPTION:
CONTROL APPLICATION NAME: APPLICATION NAME
2604
Text
2618
EXTERNAL SWITCH TYPE STATUS PACE BLOCK # 11 DMT CL BTMS ACID
TIMING OPTIONS
TIME INTRVL
KEY BLOCK
TRAIN: WHEN ALL OUTPUTS UPDATE
RUN: RUN AFTER PACE KEY BLOCK
0 01:00:0
2
2620
2606
MODE
STORE PREDICTED OUTPUTS
X TRAIN
X RUN
X WHEN TRAINING
X WHEN RUNNING
SUPPORT VECTOR MACHINE SIZE
5 INPUTS
2 OUTPUTS
3 KERNEL FUNCTION
2622
2608
X
COORDINATE INPUT DATA TIMES WITH TRAINING DATA TIMES WHEN TRAINING.
2610
TRAINING CONSTANT: .500000
2612
LOG FILE: LOG FILE NAME
2614
BLOCK STATUS: INACTIVE
KEYPAD 4 RANDOMIZE COEFFICIENTS 2616
KEYPAD 7 TOGGLE ON/OFF
KEYPAD 8 DATA SPEC PAGE 2624
KEYPAD 9 TOP OF FORM
KEYPAD -- PREV PAGE

FIG. 28

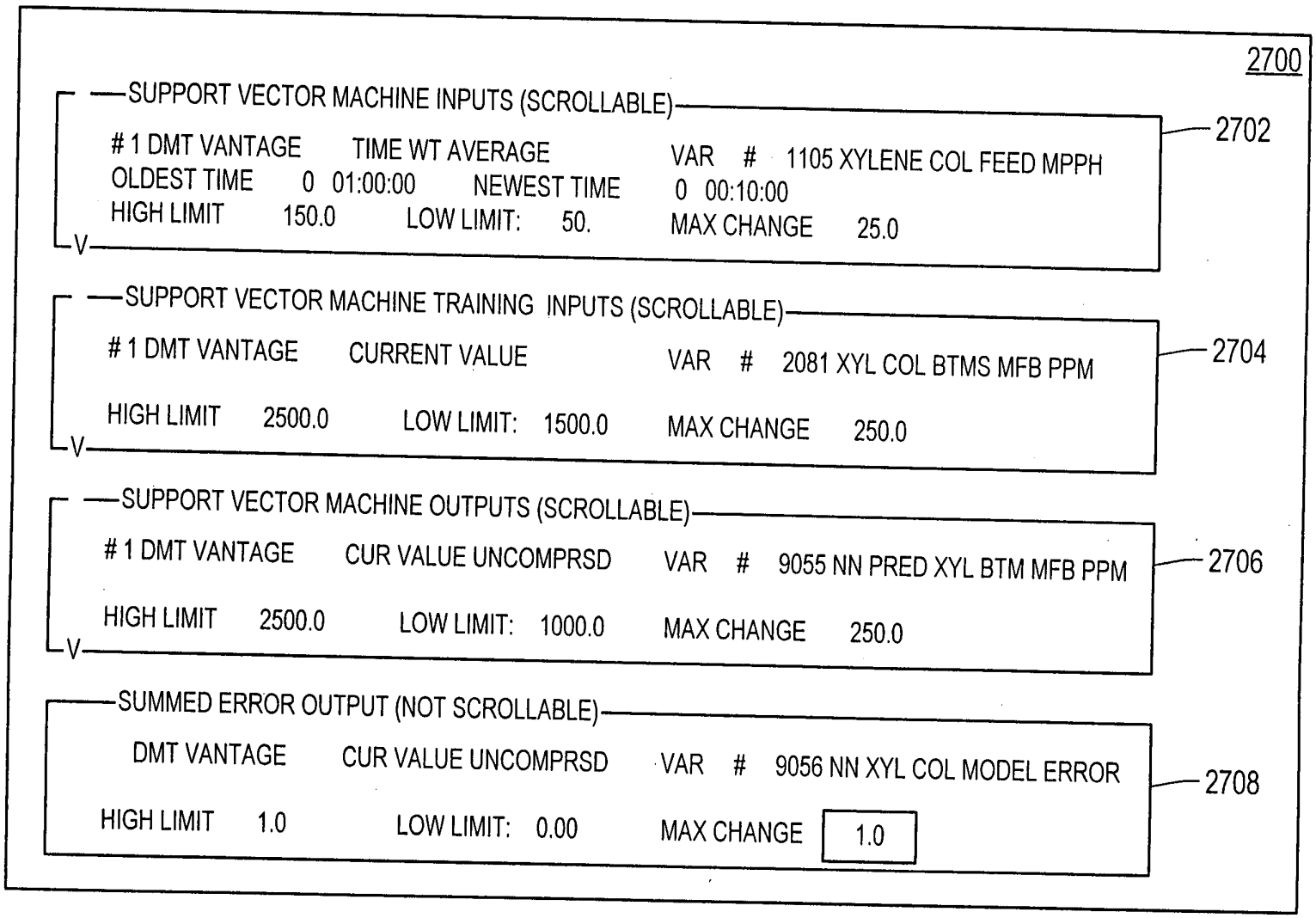
2700
SUPPORT VECTOR MACHINE INPUTS (SCROLLABLE)
1 DMT VANTAGE TIME WT AVERAGE VAR # 1105 XYLENE COL FEED MPPH
OLDEST TIME 0 01:00:00 NEWEST TIME 0 00:10:00
HIGH LIMIT 150.0 LOW LIMIT: 50. MAX CHANGE 25.0
2702
SUPPORT VECTOR MACHINE TRAINING INPUTS (SCROLLABLE)
1 DMT VANTAGE CURRENT VALUE VAR # 2081 XYL COL BTMS MFB PPM
HIGH LIMIT 2500.0 LOW LIMIT: 1500.0 MAX CHANGE 250.0
2704
SUPPORT VECTOR MACHINE OUTPUTS (SCROLLABLE)
1 DMT VANTAGE CUR VALUE UNCOMPRSD VAR # 9055 NN PRED XYL BTM MFB PPM
HIGH LIMIT 2500.0 LOW LIMIT: 1000.0 MAX CHANGE 250.0
2706
SUMMED ERROR OUTPUT (NOT SCROLLABLE)
DMT VANTAGE CUR VALUE UNCOMPRSD VAR # 9056 NN XYL COL MODEL ERROR
HIGH LIMIT 1.0 LOW LIMIT: 0.00 MAX CHANGE 1.0
2708

FIG. 29

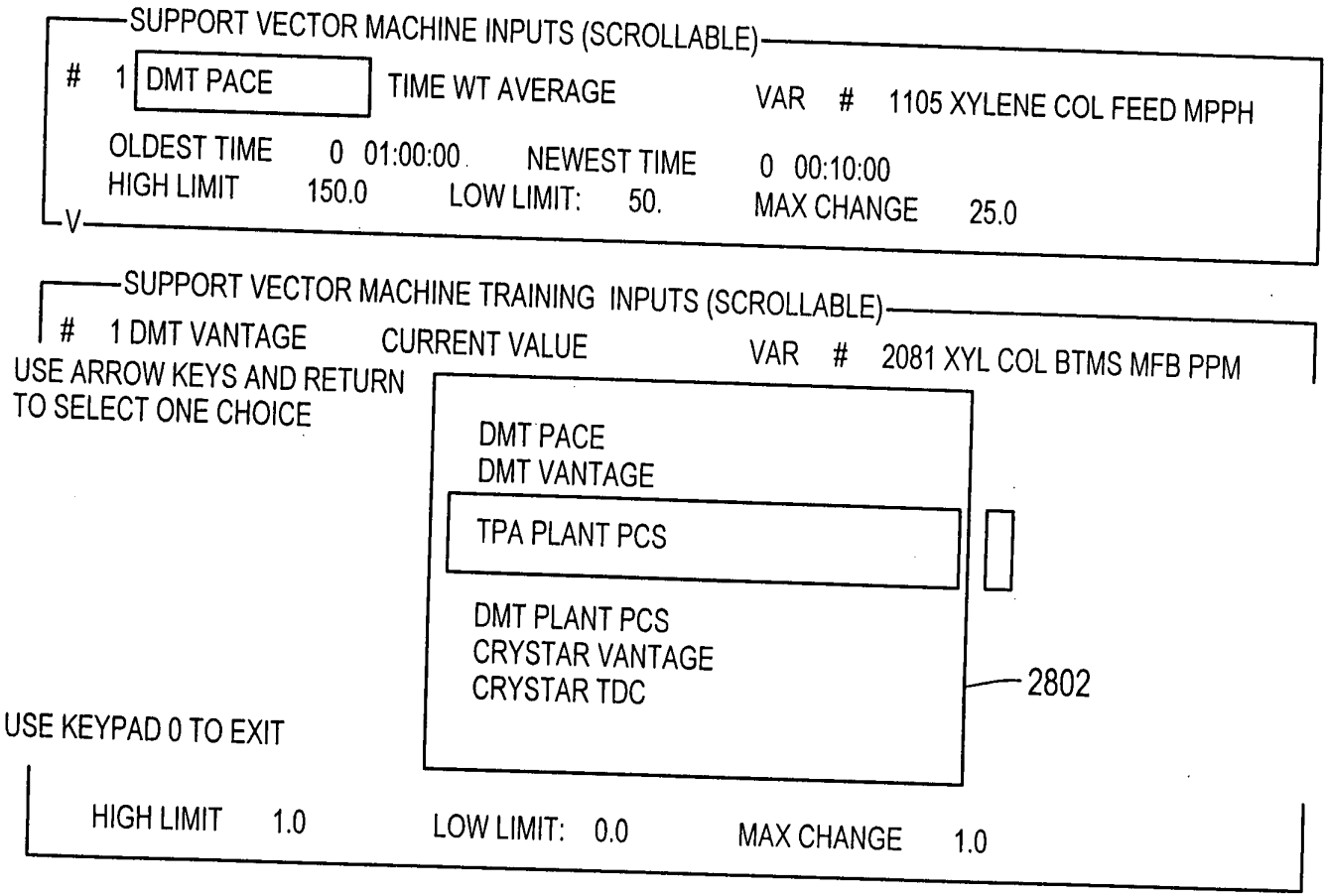
SUPPORT VECTOR MACHINE INPUTS (SCROLLABLE)
1 DMT PACE
TIME WT AVERAGE
VAR # 1105 XYLENE COL FEED MPPH
OLDEST TIME 0 01:00:00
NEWEST TIME 0 00:10:00
HIGH LIMIT 150.0
LOW LIMIT: 50.
MAX CHANGE 25.0
V
SUPPORT VECTOR MACHINE TRAINING INPUTS (SCROLLABLE)
1 DMT VANTAGE
CURRENT VALUE
VAR # 2081 XYL COL BTMS MFB PPM
USE ARROW KEYS AND RETURN
TO SELECT ONE CHOICE
DMT PACE
DMT VANTAGE
TPA PLANT PCS
DMT PLANT PCS
CRYSTAR VANTAGE
CRYSTAR TDC
2802
USE KEYPAD 0 TO EXIT
HIGH LIMIT 1.0
LOW LIMIT: 0.0
MAX CHANGE 1.0

FIG. 30

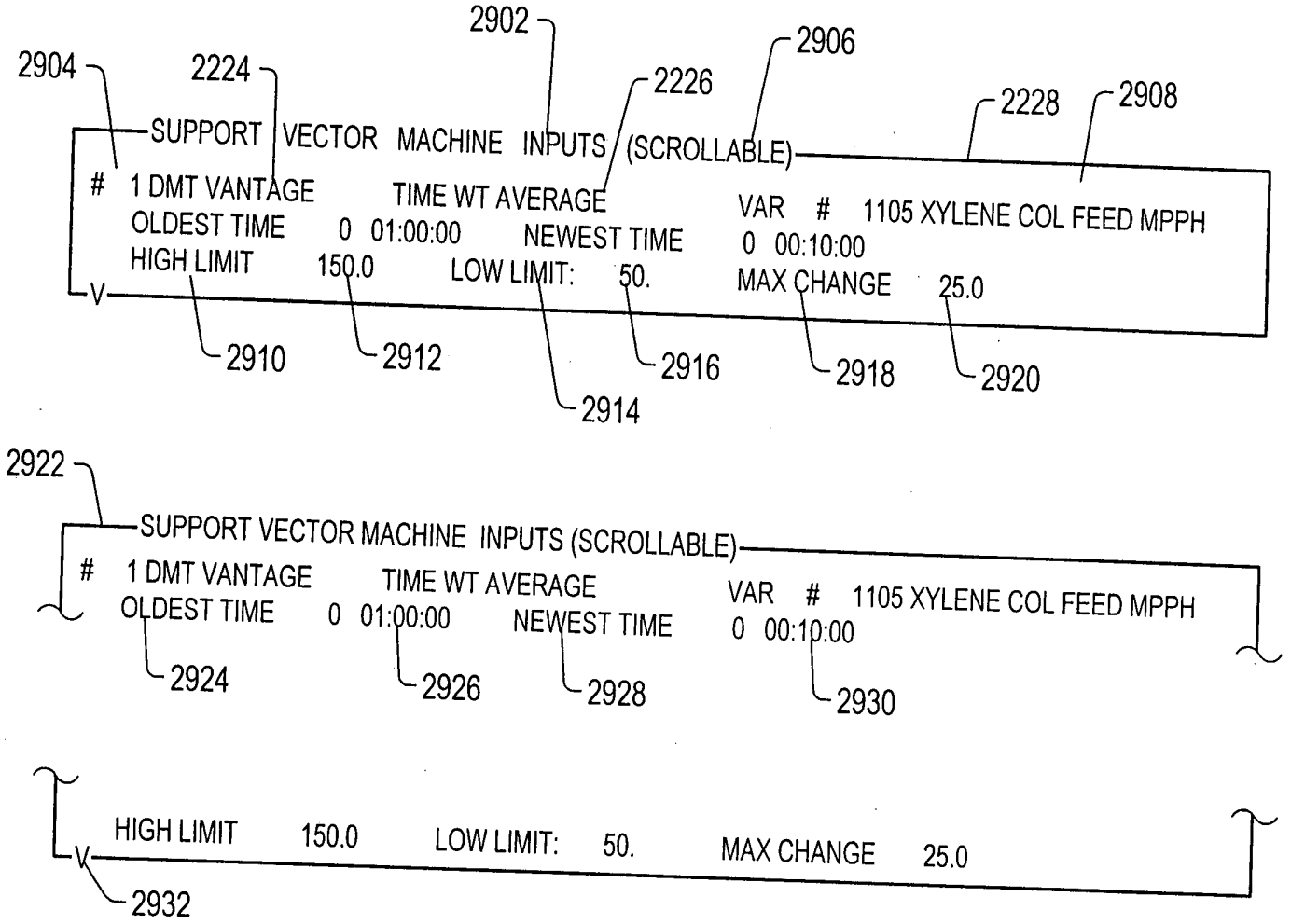
2902
2904
2224
2226
2906
2228
2908
SUPPORT VECTOR MACHINE INPUTS (SCROLLABLE)
1 DMT VANTAGE TIME WT AVERAGE VAR # 1105 XYLENE COL FEED MPPH
OLDEST TIME 0 01:00:00 NEWEST TIME 0 00:10:00
HIGH LIMIT 150.0 LOW LIMIT: 50. MAX CHANGE 25.0
2910
2912
2914
2916
2918
2920
2922
SUPPORT VECTOR MACHINE INPUTS (SCROLLABLE)
1 DMT VANTAGE TIME WT AVERAGE VAR # 1105 XYLENE COL FEED MPPH
OLDEST TIME 0 01:00:00 NEWEST TIME 0 00:10:00
2924
2926
2928
2930
HIGH LIMIT 150.0 LOW LIMIT: 50. MAX CHANGE 25.0
2932

FIG. 31

EMERSON EXHIBIT 1008 - PAGE 34 OF 69

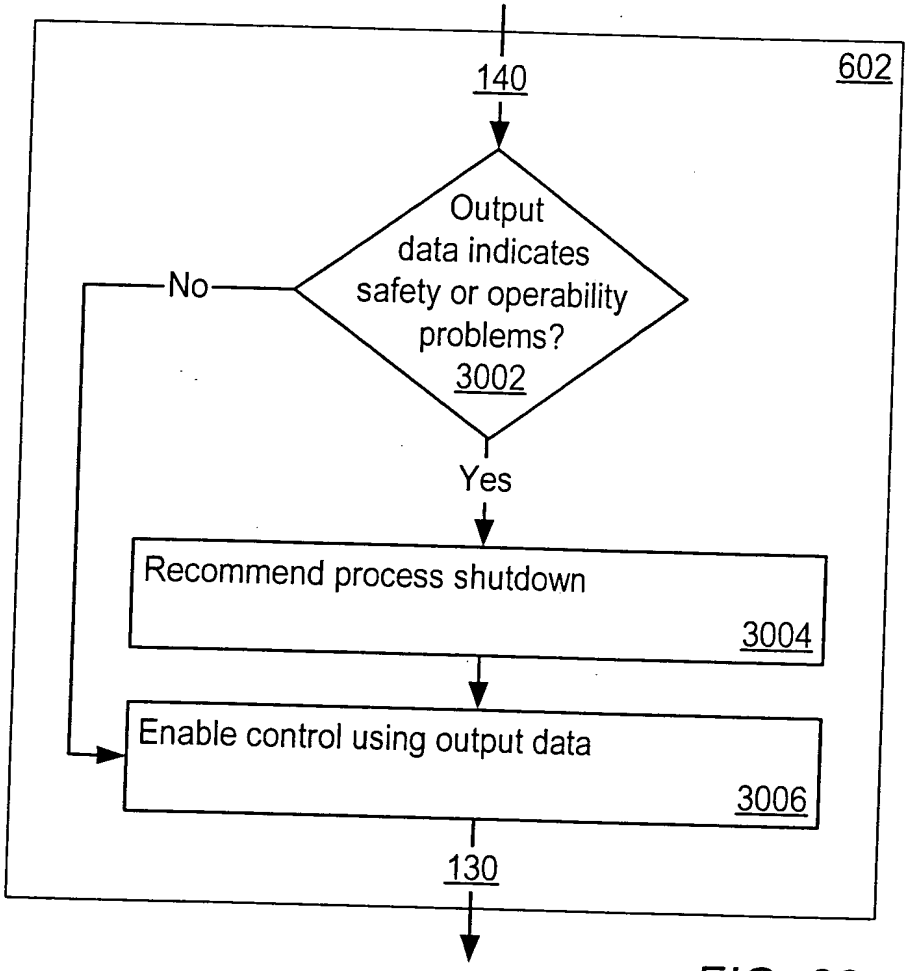

FIG. 32

Docket No. 1758.1

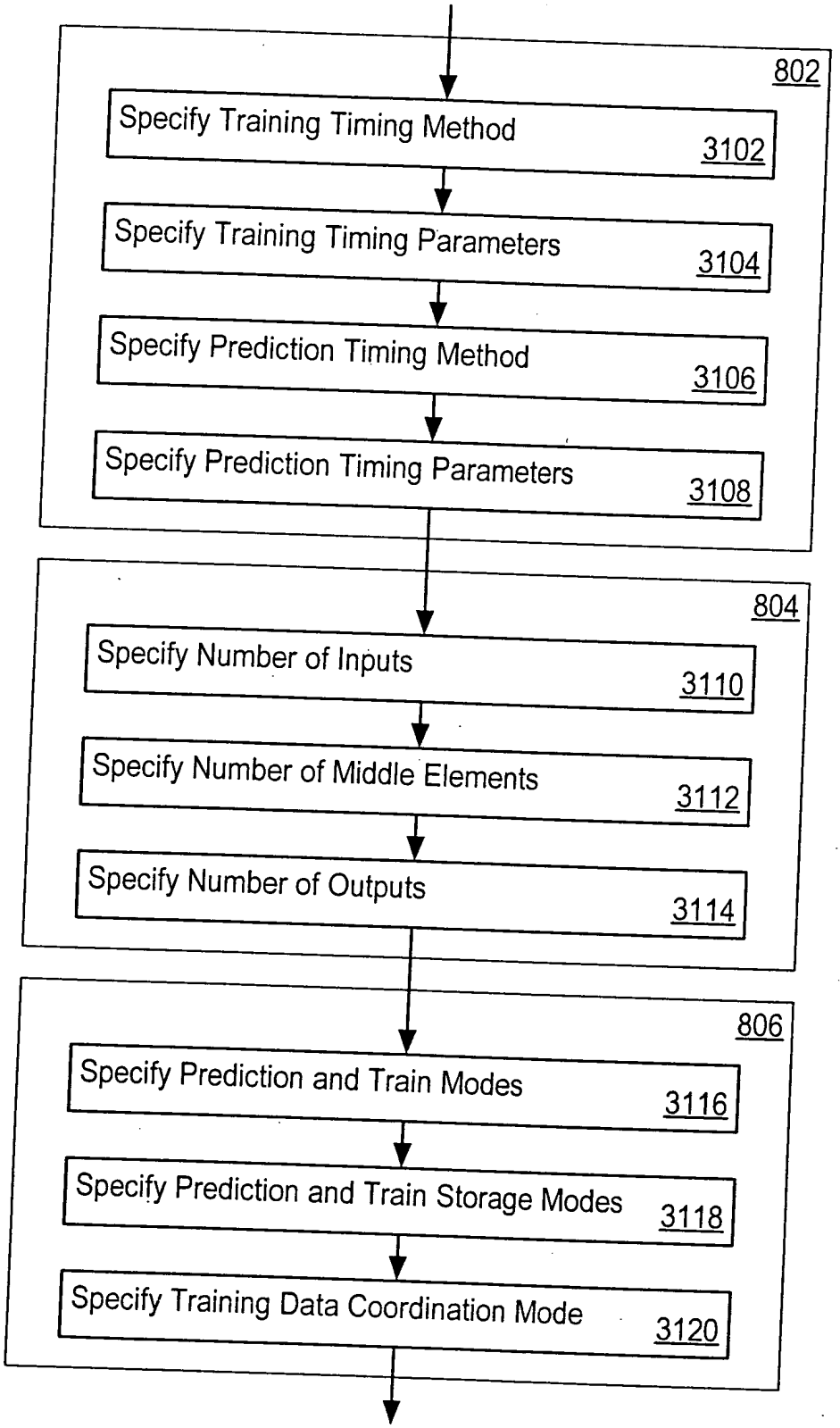

FIG. 33

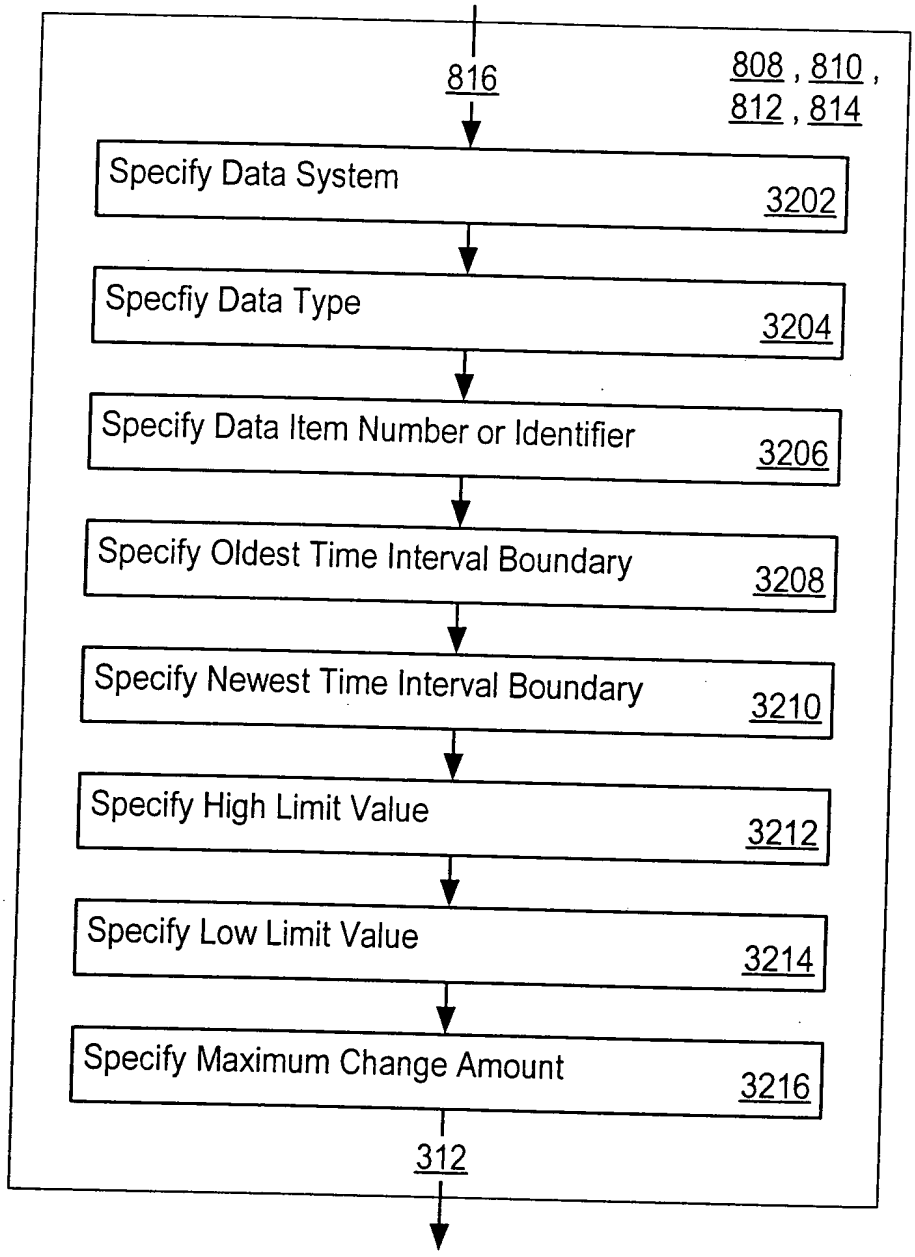
816
808 , 810 ,
812 , 814
Specify Data System
3202
Specfiy Data Type
3204
Specify Data Item Number or Identifier
3206
Specify Oldest Time Interval Boundary
3208
Specify Newest Time Interval Boundary
3210
Specify High Limit Value
3212
Specify Low Limit Value
3214
Specify Maximum Change Amount
3216
312

FIG. 34